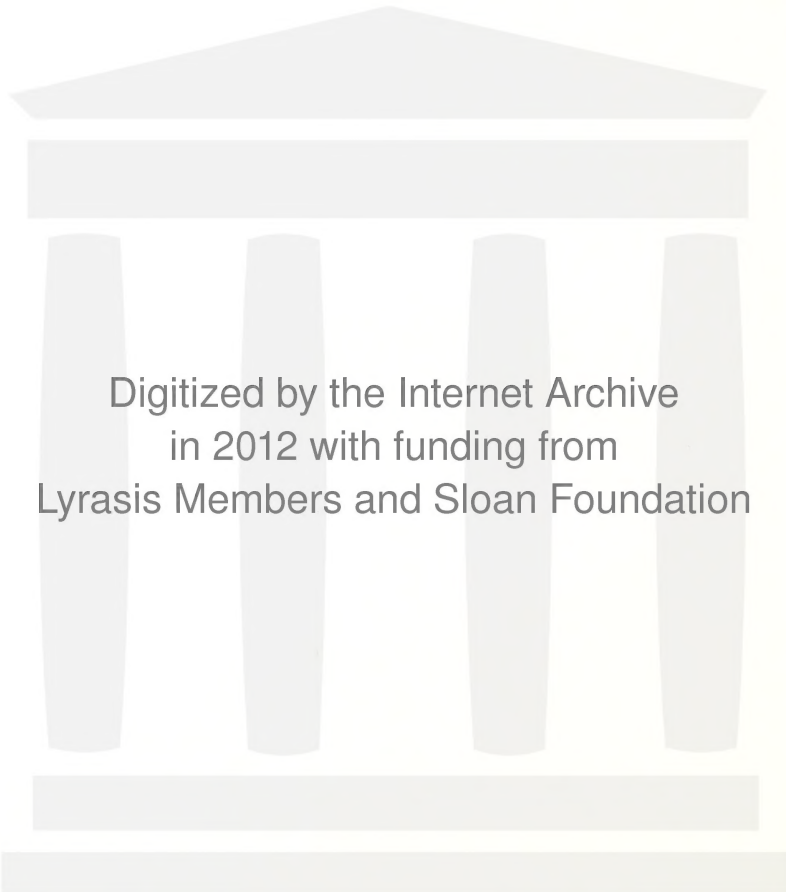


**THE INTERDISCIPLINARY APPROACH TO LOW
VISION REHABILITATION**

**EDITED BY
MONICA BELIVEAU, AUDREY J. SMITH**



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THE INTERDISCIPLINARY APPROACH
TO LOW VISION REHABILITATION

Edited by

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Audrey J. Smith, M.Ed.

Prepared for the National Training Workshop in Low Vision
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PREFACE

Professionals involved in the rehabilitation of the visually impaired have, for some time now, been acutely aware of the need for improved training and services in the area of low vision. Perhaps it can also be stated that this has been part of the problem. We have, in many instances, been painfully aware of the difficulties. We have complained about the lacks in our own professional preparation. We have been angered by the inadequate services offered to low vision individuals. And, on the whole, considering the potential of our combined resources, we haven't really done that much about solving the existing problems.

THE TIME FOR AWARENESS HAS LONG SINCE PASSED.

THE TIME FOR DOING SOMETHING ABOUT IT IS NOW!

This manual and workshop represent the efforts of many professionals who foster advocacy for the rights of low vision individuals. It is a beginning attempt towards sharing practical and functional knowledge which will, hopefully, equip us with tools to better serve our low vision clients. It represents the only approach we feel provides the best services:

a multidisciplinary approach. The manual will, by no means, make you fast "experts" by reading it, nor would the authors claim to be experts in all the areas presented. This is the key: we all need to be profoundly aware, and have a good working knowledge, of what each other's discipline has to offer by way of unique and common areas in service to low vision persons. Only then can we better develop expertise in our own areas as they relate to the low vision individual. A total approach is mandated! We can't just treat the eyeball, or the mobility or home skills, or other isolated facets of the low vision individual. A fragmented approach leads to an underserved client, while a total approach addresses the whole person.

There has been a great deal of concern and some sincere efforts in the field of education/rehabilitation of the visually impaired to strive towards this total, humanistic approach to the low vision individual. In an effort to bring the disciplines closer in this endeavor, we offer this manual as a beginning and as a continuation towards a call for ACTION. It is our hope that those who attend the workshop and those who read this manual will engage in a productive, ongoing dialogue--one that will: 1) encourage the initiation of ideas and sharing of experiences, 2) stimulate further clinical and field research, and 3) enable us to improve the quality of life of the low vision individuals we serve.

We must not allow this manual or workshop to rest as they stand, or we will have defeated our purposes in organizing these efforts. They are intended as stimuli with substance towards our major goal: the provision of comprehensive services to low vision individuals through a multidisciplinary approach. Hopefully, the time for unstructured and isolated efforts towards this goal can be considered past history.

Lastly, it is to all the low vision individuals with whom we have worked, those who have been our best teachers in this area, that we dedicate this manual, workshop, and words of Isaac D'Israeli:

"It is a wretched taste
to be gratified with mediocrity
when the excellent lies before us."

Monica Beliveau, M.Ed.

Audrey J. Smith, M.Ed.

August, 1980

THE LOW VISION POPULATION
REHABILITATION CHALLENGE FOR THE FUTURE

by

Samuel Genensky, Ph.D.
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THE LOW VISION POPULATION:
REHABILITATION CHALLENGE FOR THE FUTURE

Who are low vision persons, why should we be concerned with them, and what, if anything, can we do for them? These are good questions, and we will be concerned with each of them.

I define low vision persons to be those people whose best corrected vision in their better eye does not exceed 20/70 but is better than light perception or light projection, as well as those people whose visual field is restricted to 30 degrees or less, regardless of what their best corrected visual acuity might be. In less technical and rather rough terms, even with the help of ordinary corrective lenses, low vision persons are unable to read newspaper column type, but they can see more than light and the vague presence of objects that stand in high contrast to the background against which they are viewed. The low vision group also includes those whose visual field is no bigger than that filled out by a 10-inch dinner plate when viewed at a distance of about 18.7 inches.

In what follows I shall use the terms totally blind, functionally blind, legally blind, visually impaired, and fully sighted; and when I use those terms, I shall have in

mind rather precise definitions. For your convenience they are provided on a separate sheet.

Low vision people are numerous. A conservative estimate places their number at about one and three-quarter million nationally. Further, although only about one out of five low vision people is legally blind, those who are legally blind make up over three-quarters of the total legally blind population. To me this means that the vast majority of the legally blind are not blind. Now, what do I mean by that last statement? Well, what I mean is that given the appropriate visual aids, appropriate training in the use of those aids, and the motivation to use them correctly, the vast majority of the legally blind could read ordinary ink-printed material, write with a pen or pencil, and move around alone, in even an unfamiliar environment, without the help of a guide dog, a cane, or a sighted person.

It is legitimate to ask what we have done with these legally blind low vision persons in the past. The answer is simple; we have usually treated them as if they were totally and unequivocally blind, and we have usually offered them services that are, at best, suitable for the functionally blind. We have in essence said to these people, "Close your eyes and pretend that you can't see a thing". We have offered them Braille, cane travel, and even guide dogs, and

what is worse, we have done this out of the goodness of our hearts, and the perception that all this was in the best interests of these poor "blind" people.

Ah, you say, but that was in the past! Surely in 1980 we have become more enlightened and hence no longer treat these people so inappropriately and so unjustly. My response to that is have we - have we really progressed out of the darkness into the light? Have we made great strides forward when we devote 90 percent of the training of future teachers of the visually handicapped to instructing them in how to work with the totally blind, when we know full well that 90 percent of the children they will be asked to assist are low vision persons?

Have we moved forward when we place low vision children in classrooms that are primarily for non-handicapped children without providing them with the visual aids that they need to survive visually in such educational environments?

Have we progressed when we do not see to it that low vision children receive periodic and competently administered low vision examinations, the visual aids that would be prescribed as a result of such examinations, and the training that would be required to use those aids correctly?

Have we progressed when we neglect to teach counselor teachers of the blind (CTBs) and rehabilitation counselors

of the blind (RCBs) about low vision, low vision persons, how those persons differ from the functionally blind and from the fully sighted, what can and should be done for them, and how to make sure that things they need are provided? To me, the very terms "counselor teachers of the blind" and "rehabilitation counselors of the blind" indicate a lack of understanding on the part of rehabilitation departments and their personnel concerning the fact that most visually impaired persons are not blind, that they have remaining or residual vision, and that residual vision can and should be used to function as a low vision person within the context of fully sighted society.

One more "have we..." is crying within me for verbalization, and that is, have we really made the grade when we fail to provide our older low vision citizens with the low vision examinations, the visual aids, and training in the use of those aids that they need to remain independent and to use all their remaining sensory capabilities, including their residual vision, to continue doing the things that are important to them such as reading their mail, paying their bills, watching television, and moving about unaided indoors and outdoors.

Up to this point I have said little about the more than 1.41 million low vision persons who are not legally blind

except to point out that they make up about 80 percent of the low vision population. Historically and presently these people have usually been offered services that are at best suitable for the totally blind or they have been offered no services at all. In my opinion those that were offered no services at all were and are far better off than those who were proffered services geared to the totally blind. I say this because the former at least were recognized as having - visually speaking - something more than total blindness. To acknowledge this fact is fundamental if relevant, individualized services are to be offered to low vision persons.

I do not wish to imply criticism of functionally blind persons or to undermine their right to relevant, quality rehabilitation services. What I am emphasizing is that the rehabilitation needs of the two groups are different from each other. In my mind, both groups suffer from the lack of availability of separate, specialized services and funding for the rehabilitation of low vision persons.

I realize that I have come down quite hard on most past and current practices regarding low vision persons, and I realize that it is easier to tear things down than to build them up. Even so I want to offer you hope, encouragement, and a few practical solutions and suggestions.

First of all, we can help our low vision students to make it, at least visually, in the least restrictive classroom setting, i.e., in classrooms that are primarily for non-handicapped children. We can do this in the following way:

1. Provide them, when they first enter school and at a minimum every three years thereafter, with a complete and thorough low vision examination performed by a qualified optometrist or ophthalmologist who is well grounded and experienced in low vision practice;
2. Supply them with the visual aids that are prescribed as a result of these examinations and that will help them to function visually in school and while carrying out school-related activities away from school; and
3. Train them in the use of those prescribed aids so that they will be able to use them intelligently and efficiently.

Secondly, we can spend more time teaching future teachers of the visually handicapped about low vision persons; how they differ from functionally blind and fully sighted persons; what visual aids help these people, particularly in a classroom setting or in other environments where they can be expected to perform school-related tasks; how these visual

aids work; and how they should be used.

Thirdly, we can teach CTBs and RCBs about low vision and about low vision persons; why it is so important that these low vision clients use all of their sensory capabilities - including their residual vision; how that vision can and should be used together with appropriate visual aids to perform tasks that require precise eye-hand coordination such as reading, writing, and assembling parts; how various visual aids work; and how those aids should be used.

Fourthly, we can teach CTBs, RCBs, and orientation and mobility specialists that the residual vision of low vision persons is the most important visual aid they possess, and that when it is augmented with appropriate prescribed visual aids, most of their clients can and should use that residual vision to move about alone and in even unfamiliar places without a cane, guide dog, or sighted person.*

*I readily concede that persons who have very restricted visual fields should be taught how to use a cane because with their limited visual fields they are not able to make life-protecting decisions when attempting, for example, to maneuver through heavy traffic, particularly at crossings without traffic signals or at those where pedestrians tend to ignore existing signals.

I also concede that persons with normal or near normal fields, very poor visual acuities and an inability to react rapidly to the degraded visual information that they receive, should be advised to carry a cane as an indicator to pedestrians, cyclists, and drivers that they have a serious visual problem.

Fifthly, we can work toward the passage of legislation that will obligate Medicare to cover the cost of low vision examinations, performed by qualified ophthalmologists or optometrists, the aids prescribed as a result of those examinations, and training in the use of those aids.

Finally, we can work for the removal of architectural and environmental barriers that make moving around for partially sighted persons much more hazardous and inconvenient than it need be. For example, we can make steps and stairways visually safer for persons whose visual acuity in their better eye is as low as 20/1000 by painting or otherwise marking the leading edge of each step (of indoor or outdoor stairways associated with public buildings or public grounds) on both the runner and the riser with a stripe that is two inches wide, that runs the entire width of the step, and that is of a color and gray value that stands in high contrast to the rest of the step.

Thus we see that even though low vision persons have received an unfair shake in the past and frequently still are treated unjustly in the present, this state of affairs need not continue into the future. It is up to persons like ourselves to see that concrete steps are taken to rectify this very rectifiable wrong. To do this, however, we must first take the following six steps:

1. Recognize that the visually impaired population, i.e., the population that consists of low vision persons and the functionally blind, is heterogeneous and not homogeneous.
2. Acknowledge that remaining or residual vision is valuable and should be used together with other sensory capabilities to function successfully in society.
3. Accept the reality that low vision persons, visually speaking, are distinctly different from functionally blind persons and from fully sighted persons.
4. Recognize that the dichotomy created by the division of our population into non-legally blind and legally blind persons is not only artificial, but is actually injurious to the vast majority of the legally blind and to the 1.41 million low vision persons who are not legally blind.
5. Cease referring to low vision persons as blind persons no matter what adjective is placed before the word "blind" in an attempt to make it more palatable.
6. Work for the creation and implementation of services that are tailored to meet the particular needs of low vision persons.

Until these steps are taken, I believe little if any-

thing can be done to really improve the lot of low vision persons. Some of us are out there providing help, but our efforts will only attenuate with time and the exhaustion that comes with time, if the six steps I stated above are not taken by the overwhelming majority of those who profess to be interested in low vision persons and in helping them to make it within the context of the majority or fully sighted society.

DEFINITIONS

1. FUNCTIONALLY BLIND: Persons are functionally blind if they have no eyesight at all (i.e., totally blind) or if they have only light perception or light projection.
2. LIGHT PERCEPTION: The ability to see light but not to see shapes, forms, colors, or other details.
3. LIGHT PROJECTION: The ability to see light and the vague image of objects that are in high contrast to the background against which they are viewed.
4. LEGALLY BLIND: Persons are legally blind if the best corrected visual acuity in their better eye does not exceed 20/200 or if the maximum diameter of their visual field does not exceed 20 degrees. Roughly speaking, persons are legally blind if, when viewing the ordinary Snellen eye chart at a distance of 20 feet, they can see at most the big E, or if their visual field is no bigger than that occupied by a 10-inch dinner plate viewed at about 28.4 inches.
5. LOW VISION PERSONS (PARTIALLY SIGHTED): Low vision persons are those people whose best corrected vision in their better eye does not exceed 20/70 but is better than light perception or light projection, as well as those people whose visual field is restricted to 30 degrees or less, regardless of what their best corrected visual acuity might be. Roughly speaking, even with the help of ordinary corrective lenses, low vision persons cannot read newspaper column type, but they can see more than the vague image of objects that are in high contrast to the background against which they are viewed. The low vision group also includes those whose visual field is no bigger than that filled out by a 10-inch dinner plate when viewed at a distance of about 18.7 inches.
6. VISUALLY IMPAIRED: Persons are visually impaired if they are low vision persons or functionally blind.
7. FULLY SIGHTED: Persons are fully sighted if they are not visually impaired.

THE EYE AND FUNCTIONAL VISION

by

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THE EYE AND FUNCTIONAL VISIONFUNCTIONAL LOSSES

Typical approaches used to understand the ocular pathology involved in the low vision field are directed at memorizing names of pathologies with a few descriptive terminologies, or to suffer through yet another course in ocular anatomy. Since the Vision Rehabilitation Service emphasizes function, it's really of minimal importance to the rendering of services what the specific pathology involved is. Our interests are directed towards what functional losses have occurred as a result of the eye disorder or pathology. However, knowing and understanding the pathology involved helps the low vision team formulate appropriate treatment programs a little more quickly at times.

Some of the visual disturbances caused by ocular pathologies and/or disorders that the functional low vision specialist will encounter are:

1. Lowered Central Acuity/Fluctuating Vision: blurred or unclear vision; stable, or inconsistent
2. Metamorphopsia: distorted images
3. Photophobia: sensitivity to light
4. Color Distortions: colored tinges to objects

5. Field Defects: the most commonly seen are:

General contraction or depression - objects in the periphery are not seen.

Hemianopsia - the right half, left half, upper half or lower half of the visual field is missing.

Scotoma - mostly seen as a central scotoma, where the macula is no longer functioning but all the retinal tissue around the scotoma area is intact. (This central scotoma rarely results in less than 20/400 vision.)

6. Night Blindness: difficulty seeing at night
7. Entoptic Images: projection of an internal scotoma onto the viewed image
8. Occilopia: perception of the viewed image as constantly moving
9. Amaurosis Fugax: temporary blindness
10. Diplopia: "double vision"; either monocular or binocular
11. Nystagmus: involuntary movement of the eye

There are other functional losses that you will observe and have to deal with, but these are the ones that will be encountered more routinely in the Vision Rehabilitation Service. It is important to remember that all these functional losses are probably stable and a characteristic loss of

a particular pathology, but they also may be indicative of active changes. It is important to work in close conjunction with the staff optometrist or ophthalmologist when evaluating the person's functional losses.

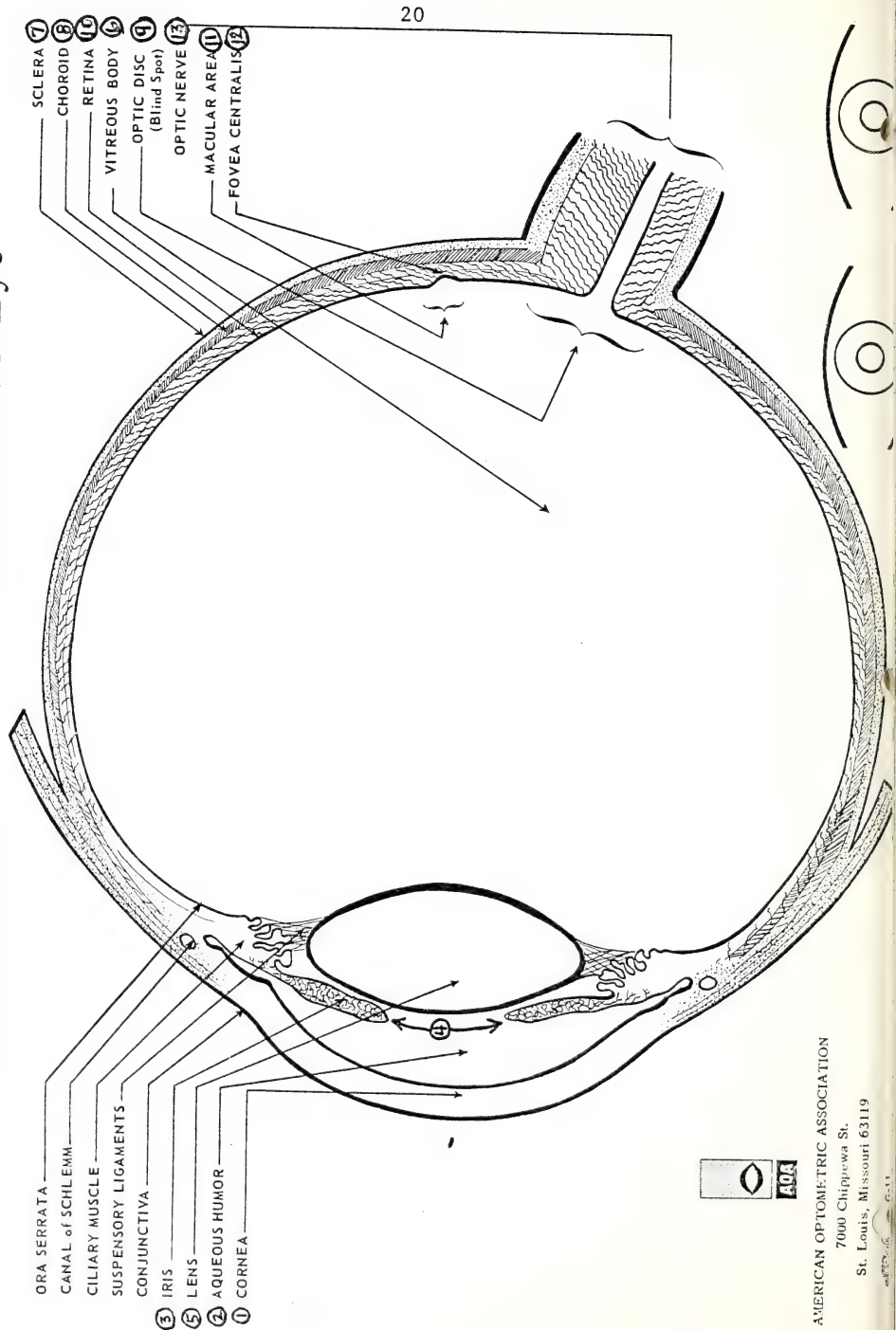
ANATOMY OF THE NORMAL EYE

The normal eye is free from disease; is capable of seeing detail (good visual acuity); enjoys a full 180 field or greater (with binocular viewing), and may have a refractive error. While a refractive error causes a reduction in acuity, it is not pathological and can be corrected with spectacles or contact lenses.

The major parts of the eye are: the cornea (1), aqueous (2), iris (3), pupil (4), lens (5), vitreous (6), sclera (7), choroid (8), blood vessels/optic disc (9), retina (10), macula (11), fovea (12), and optic nerve (13). See attached diagram for location and illustration of these parts.

The cornea (1) is the outer, approximately circular, clear part of the eye. Its functions are to protect the inner contents of the eye, allow light to pass through it, and to act as the strongest converging lens of the eye. If the cornea should become damaged, infection of the eye's inner more delicate structure might occur.

Schematic Section of the Human Eye



If as a result of injury or disease, all or part of the cornea should become opaque, light transmission will be reduced, and acuity could be severely affected.

The aqueous (2) lies just behind the cornea in the space known as the anterior chamber. The aqueous is a watery fluid. Its function is to bring nutrients and remove waste products from the back surface of the cornea (1) and the lens (5). It also helps maintain the shape of the eye.

The iris (3) is the colored part of the eye. Its function is to regulate the amount of light which comes in to the eye. It does this by regulating the size of the pupil (4).

The lens (5) lies just behind the iris. It is a clear converging lens. Its function, along with the cornea, is to converge light onto the retina. If it should become cloudy, visual acuity is severely affected.

The largest part of the eye is the vitreous (6). It is composed of a thick gel-like material. The function of the vitreous is to maintain the shape of the eye. If the vitreous should become hazy as a result of infection of surrounding structures, or opaque due to hemorrhages, visual acuity may be affected, since light transmission to the retina is reduced.

The outer most part of the eye is a white tough coating

called the sclera (7). Its function is protection of the inner more delicate structures. If the sclera becomes diseased (which rarely occurs) or damaged, a severe infection of the inner contents may result.

The choroid (8) is the layer between the sclera (7) and retina (10). It is highly vascular and carries the blood supply (9) for the eye. In very young children, the outer layer, the sclera is very thin and allows the choroid to show through giving a bluish tinge.

The retina (10) is the innermost part of the eye and the most delicate. Its function is vision. Once damaged, there is no replacement of visually functioning tissue. The retina contains the macula (11), the area of best vision (mostly cone cells). Within the macula is the fovea (12), the area of the most acute vision (all cone cells).

The optic nerve (13) carries the message up to the brain. It is actually the brain that "sees". If the optic nerve is damaged, vision is severely disturbed.

REFRACTIVE ERRORS

Degenerative myopia is a condition of extreme near-sightedness (myopia). Afflicted individuals generally are myopic from a very early age (sometimes from birth) and undergo progressive increases in near-sightedness through the adolescent years. Initial symptoms exhibited by an affected

individual may only be blurred distance vision due to the myopia. Acuity is improved with conventional glasses. As the condition progresses, the decreased visual acuity may not be correctable to 20/20 with conventional spectacles or contact lenses. This is due to the stretching of the retina and accompanying degenerative changes. Near vision will generally be unaffected although it may be impaired in more advanced conditions. Complaints of flashing lights or sharp pain may be indicative of retinal detachment and should be investigated immediately. Such complaints should never be ignored in any individual due to their serious implications.

Many eye reports will list the patient's or client's problem as being due to congenital astigmatism. This condition is usually associated with nystagmus and with a reduction in central acuity probably due to poor macular development. Since these three anomalies are usually found together, the terms congenital astigmatism, congenital nystagmus and congenital amblyopia will often be used on reports interchangeably to refer to the same functional congenital problem. The acuity usually improves somewhat with age (or at least, the child learns to better interpret the blurred images), and the nystagmus will also be found to decrease with age. Conventional spectacles to correct the astigmatism usually do not improve the acuity in these

cases because the damage is cortical as well as corneal or refractive. The acuity is typically in the 20/200 to 20/400 area.

OCULAR ABNORMALITIES

Tears: are a mixture of 3 separate layers - the outermost oily layer, central aqueous layer, and an inner mucoid layer. The most important function of the tear film is to form an almost perfect optical surface on the cornea. It fills in all corneal irregularities, producing a smooth refractive surface. Its second purpose is to serve as a lubricant for the eye and lids as the lids move over the exposed surface of the eye. A third purpose is to provide bacteriacidal action for protection of the sensitive corneal epithelium. Deficiency in any of the tear film components may lead to the dry-eye syndrome. Patients with dry eyes complain most frequently of a scratchy or sandy sensation.

The cornea: is the next major structure of the eye. It is the transparent section of the eye's outer tunic. Together with the lens, the cornea serves to focus the optical image on the retina. Of the cornea-lens combination, the cornea provides about 65% of the refractive power of the eye. The cornea is avascular and also it is in a relatively dehydrated state which both contribute to its transparency.

It is also a highly sensitive tissue of the body - which accounts for the severe pain that results from seemingly minor corneal irritations.

Since the cornea serves as the window of the eye and refracts light rays, corneal lesions cause some degree of blurred vision. The blurring is greater if the lesion is centrally located. Scarring or perforation due to corneal ulceration is a major cause of blindness throughout the world.

Keratoconus (kera = cornea, conus = cone-shaped) is exactly what its name indicates; a cone-shaped cornea. It is a condition that first becomes noticeable sometime in the teen years. It may initially present itself as a progressive decrease in visual acuity. The patient may find herself (occurs more often in females) needing a new prescription every year or six months during a time when her refractive error should be fairly stable. Distance vision is generally worse than near vision. This is due to the fact that when the cornea becomes progressively cone-shaped, near-sightedness is being induced. Thus, the patient may find she can read adequately but is having problems seeing distant objects such as the blackboard or television. Visual acuity will depend upon the extent of the condition and may range from mild distortion to severe visual impairment that cannot be

adequately corrected with spectacles or contact lenses. The condition may progress to the point where the cornea ruptures resulting in blindness. There is generally no observable loss of visual field, but rather, an overall distortion of the visual field.

Contact lenses are many times used to retard the bulging of the corneal cone, however, this is not always successful. In severe cases corneal transplants (keratoplasty) may be successful, if performed before the condition progresses to a more advanced stage.

Corneal dystrophies are a rare group of slowly progressive, bilateral, degenerative disorders which usually appear in the second or third decades of life. In most cases the symptoms and signs are slowly progressive until useful vision is lost. Corneal transplants improve vision significantly in most cases.

Glaucoma: is a disease in which the pressure within the eye is high, causing damage to the tissues of the eye, resulting in some loss of vision. This loss may be a decrease in visual acuity, a visual field loss, or both. There are many types of glaucoma, each with its own signs and symptoms. Detecting the condition in the earliest possible stage is the most important factor determining the success of treatment. Glaucoma is a vision threatening condition and should

be treated as such.

Glaucoma may be divided into two broad categories; adult and congenital glaucoma.

An episode of nausea, headache, severe eye redness and pain may be an indication of an acute glaucoma attack. Due to the physical structure of the eye, the intraocular fluid (aqueous) cannot drain. These attacks can be very painful and may require emergency surgery. Such attacks can do permanent damage to the ocular tissues and cause visual field loss.

Chronic simple glaucoma does not have such dramatic symptoms. Unfortunately, many patients choose to ignore these subtle symptoms. Since the central vision is the last to be affected, patients are not aware that the tissue damage being done by the high intraocular pressure is robbing them of their peripheral vision. Thus, they first notice something is wrong for example, when they no longer see the edges of doorways as they pass through them. They may not see cars or other objects approaching from their sides.

The optometrist or ophthalmologist can detect glaucoma very early during general exam procedures. Tonometry is a test which measures the pressure inside the eye. Any elevation will be detected during this test. Also, close examination of the internal structures of the eye when doing

ophthalmoscopy will indicate if any tissue disturbance has occurred due to the elevated pressure. Finally, careful visual field testing will determine if there is any defect in that area.

There is also a condition in which the I.O.P. is too low and this can often lead to retinal detachment and uveitis which will be discussed. A sustained abnormally low I.O.P. usually causes shrinkage of the entire eye until it is non-functional - this is called phthisis bulbi.

The Uveal Tract: is made up of three components: the iris - which is the colored part of the eye surrounding the pupil - it controls the amount of light entering the eye; the ciliary body which we said before produces the aqueous humor; and the choroid which lies between the retina and sclera - it supplies a large portion of the blood supply to the eye.

Inflammation of the uveal tract is called uveitis and its symptoms are injection or redness of the eye, photophobia, and blurred vision. The blurred vision is due to a cloudy aqueous or vitreous.

When there is a partial or complete absence of the iris, it is called aniridia. Aniridia is a failure of the iris to develop fully. This congenital defect (present at birth) may vary from a minor abnormality to an almost total

structural lack of iris tissue. There is always some iris developed although it may not be visible to the naked eye. It is generally a bilateral condition (affects both eyes), however in rare cases, it may be unilateral. The general appearance is that of an extremely large pupil. Such patients are extremely sensitive to light (photophobia), have decreased visual acuity and may demonstrate nystagmus (rapid, involuntary movement of the eyes). Glaucoma (high intraocular pressure) is a secondary problem in many of these cases. This occurs when the iris remnants interfere with the drainage of the ocular fluid (aqueous). This increased pressure may cause pain, constriction of the visual fields (tunnel vision) and cloudiness of the cornea further decreasing visual acuity. Cataracts, displaced lens and underdevelopment of the retina, are frequently associated ocular defects.

Patients with aniridia are sometimes helped with pin-hole contact lenses to decrease the amount of light reaching the back of the eye. Aside from reducing the patient's photophobic complaints, such a lens will generally improve visual acuity slightly and may reduce nystagmus.

The Lens:

The crystalline lens is a biconvex, avascular, colorless and almost completely transparent structure. It is

suspended behind the iris by fibers which connect it with the ciliary body. The lens becomes larger and less elastic throughout life and this is the reason for presbyopia (loss of accommodative ability necessary for near tasks). The sole function of the lens is to focus light rays upon the retina. The lens consists of 65% water and about 35% protein. There are no pain fibers, blood vessels or nerves in the lens. Common disorders of the lens are opacification (cataracts) and dislocation. The patient with an opacity or dislocation of the lens will complain of blurred vision without pain.

Partial or complete lens dislocation may be hereditary or may result from trauma. Hereditary lens dislocation is usually bilateral and may be associated with coloboma of the lens, Marfan's syndrome, and Hallerman-Streif syndrome. The vision is blurred, particularly if the lens is dislocated out of the line of vision. If dislocation is partial, the patient may complain of monocular diplopia (double vision). When a lens is dislocated, removal may be recommended to prevent blockage of aqueous outflow which could lead to glaucoma.

A cataract is any opacity of the lens. They vary markedly in degree of density and may be due to a variety of causes but are often associated with aging. Some degree of cataract formation is to be expected in persons over age 70.

Most are bilateral, although the rate of progression in each eye is seldom equal. Most cataracts are not visible to the casual observer until they become dense enough (mature or hypermature) to cause blindness. The clinical degree of cataract formation, assuming that no other eye disease is present, is judged primarily by the visual acuity. Generally speaking, the decrease in visual acuity is directly proportional to the density of the cataract. However, some individuals who have clinically significant cataracts when examined with the ophthalmoscope or slitlamp see well enough to carry on with their normal activities. Others have a decrease in visual acuity out of proportion to the degree of lens opacification. This is due to distortion of the image by the partially opaque lens.

Congenital cataracts are those opacities present at birth or developed shortly after birth. Surgery may be necessary in cases of severe visual impairment. This should be performed as early as possible in order to allow normal visual development. Failure to do so may result in the development of a squint (turning in or out of the affected eye). Complications due to congenital cataract removal are fairly common in the form of secondary cataracts (opacification of remaining lens material) and possible vitreous and/or retinal detachment. The latter are due to

the strong adherence of the vitreous to the back portion (posterior capsule) of the lens. Improved surgical techniques have reduced the incidence of problems. Surgery however, is advocated only in cases of marked visual impairment. The presence of other ocular disorders would further contraindicate surgical removal of congenital cataracts.

The effect of congenital cataracts on vision varies greatly due to the size, position and density of the opacity. Generally, patients with cataracts will manifest blurred vision. Visual acuity may range from near normal to greatly reduced. Nystagmus (rapid involuntary movement of the eye) may be manifested in severe cases of congenital cataracts. The patient may complain of serious glare problems. Night vision is not generally affected. Visual fields are generally normal, although there may be some reduction in peripheral fields. One of the first manifestations of a congenital cataract may be the development of a squint or of strabismus (turning in or out of the affected eye). This is due to the lack of visual stimulation of the affected eye, resulting in a type of amblyopia (reduced visual function).

Centrally or posteriorly located opacities (such as posterior subcapsular cataracts) may affect near vision to a greater extent than distance vision. Such cataracts are

also more debilitating in bright light. Cortical cataracts (those opacities located in the cortex or outer portion of the lens) may result in poor color discrimination due to abnormal scattering of light rays. In cases of nuclear opacification (the central portion of the lens is affected), dilation of the pupil may significantly improve visual acuity by allowing the patient to view around the cataract. This is accomplished by the application of dilating agents (in the form of drops or ointments) on a regular basis and is an alternative treatment to surgery.

Following cataract surgery, a refractive correction is needed. This can be provided in the form of a spectacle correction or a contact lens. If the patient is a unilateral aphake (cataract removed from one eye only), a spectacle correction would be undesirable due to the magnification effects of the spectacle lens. A contact lens would minimize the problems this patient would experience. Removal of the lens also takes away the ability of the patient to accomodate (focus for a near object), therefore a bifocal correction or reading correction is necessary for the patient to function at near distance. Many patients experience increased glare problems following cataract extraction. These problems can be alleviated through the use of sunglasses.

Posterior subcapsular cataracts are a type of cataract

(lens opacity) in which the posterior or back portion of the lens becomes hazy or cloudy. Due to the position of the opacity, the effect on vision can be devastating. Afflicted individuals will generally notice poor vision in bright sunlight and/or poor near vision. Such complaints are due to a resulting impairment when the pupils are constricted. This maximizes the effect of the cataract by preventing the patient from seeing "around" the opacity. Distance vision is, in general, minimally affected in the early stages.

Posterior subcapsular cataracts are generally bilateral (both eyes affected), although in cases of traumatic injury they may be unilateral. Visual fields are generally normal although some central distortion may be evident. Such patients may notice some color distortion and glare problems (particularly at night) due to scattering of light by the opacity.

The Vitreous:

The vitreous is a clear, avascular, gelatinous body which comprises $\frac{2}{3}$ of the volume and weight of the eye. It plays an important role in maintaining the transparency and form of the eye. If the vitreous were removed, the eye would collapse. When the vitreous is replaced by saline, as in certain forms of vitreous surgery, cellular matter and particulate debris are free to migrate into the optical

pathway. The vitreous is about 99% water.

The Retina:

The retina is a multi-layered sheet of neural tissue. As a sensory structure, it contains cells that respond to visual stimuli by a photo-chemical reaction. Light must traverse most of the retinal layers in order to reach and stimulate the layer of rods and cones. Cones function best in bright light and mediate not only vision but also color. In the central areas of the retina, cones are more numerous than rods. In the macula itself, the area of most acute vision, only special cones are present. In contrast, rods are most numerous in the periphery of the retina. Since rods are extremely light sensitive, they function best in reduced illumination.

Therefore, the purpose of the retina with all its layers and specialized cells is to initiate impulses to the cortex via the optic nerve for visual perception.

Most disorders of the retina cause blurred vision. If the macular area is diseased, the patient's central visual acuity will be affected and he will have difficulty reading and discerning objects in the distance (e.g., street signs). If the peripheral portion of the retina is diseased, side vision is impaired but the patient will continue to read. There is no pain with retinal disease (it contains no pain

fibers), and the eye does not become red or inflamed.

Flashing lights are a common symptom of retinal detachment. The patient is aware of a localized streak of light or flashing in his field of vision for which he can find no reasonable explanation. The light seldom persists for more than a fraction of a second. It frequently reoccurs at short intervals for a few minutes and then disappears for hours, days or even weeks. It is most readily identified on moving the eye, especially when illumination is dim or absent. Although this phenomenon is unilateral, a similar episode commonly occurs in the other visual field. The light represents a cerebral awareness of a new abnormal vitreous stimulation of the retina. It is most commonly associated with a recent collapse and detachment of the vitreous. A careful history will readily distinguish it from the scintillating scotoma of migraine, which is characterized by a symmetric quivering scotoma in both eyes, predictable configuration and progression, and variable nausea or headache.

Flashing lights in themselves require no treatment; the patient may be reassured that the symptom will pass. However, this may signal a retinal tear, retinal detachment, or vitreous hemorrhage, and therefore must be carefully watched and monitored by the individual's own optometrist

or ophthalmologist.

Retrolental fibroplasia is a condition commonly seen among premature infants who received oxygen therapy. The condition is highly variable, and may range from minimal ocular damage with no visual impairment, to complete retinal detachment and scarring with resultant total blindness. The extent of the condition depends on many factors, including the length of time the infant received oxygen as well as the level of oxygen administered. The condition can be avoided or minimized by careful monitoring of the oxygen levels in incubators for premature babies.

New vessels and fibrous tissue cause a stretching of the retina and may eventually lead to retinal detachment (most often, in the late 20's). These changes are generally first observable at about 1 month of age. Once these changes begin, it is difficult to say how far they will progress. It is estimated that approximately 20% will result in total blindness.

Afflicted individuals may appear externally normal. In very severe cases, one may notice leukocoria (white pupil) and microphthalmus (small, underdeveloped eye). These individuals generally have no usable vision or extremely low levels of visual acuity. Such individuals can generally

be helped with low vision aids such as telescopes and microscopes.

High amounts of myopia (nearsightedness) are common among retrolental fibroplasia patients. Contact lens corrections can often provide significant improvement in these cases. Glaucoma and uveitis (inflammation of the vascular layer of the eye) are common secondary problems that must be guarded against to prevent further complications.

In spite of the fact that the condition is seen predominantly among children with a history of prematurity, it is occasionally seen in full term infants. The mechanism by which it occurs is not completely understood. There does not seem to be a genetic tendency in these cases.

In central retinal artery occlusion, there is an obstruction in the central retinal artery that feeds the retina. When this occurs, the result is sudden complete loss of vision in the affected eye. If the patient is seen within 2 hours of the onset of the symptoms, medical treatment may be successfully initiated. One should attempt to restore the blood flow by massaging the globe or perhaps with vasodilators.

In central retinal vein occlusion, there is an obstruction in the central retinal vein. This results in retinal

hemorrhages and the patient usually complains of a sudden painless loss of vision. As the hemorrhage clears, vision is usually decreased but not lost. Young patients with central retinal vision occlusion have a better prognosis for maintaining some visual function than older individuals.

Diabetic mellitus is currently the second leading cause of blindness in the United States. By the early 1980's, it is predicted that it will replace glaucoma as the leading cause of blindness. It is a systemic condition due to the lack of insulin in the bloodstream. Insulin, which is produced by specific cells in the pancreas, is necessary to control the amount of sugar circulating in the bloodstream. Insufficient amounts of insulin result in hyperglycemia (high blood sugar levels) and problems metabolizing carbohydrates, fats and proteins. This in turn, affects many parts of the body including the eyes, kidneys, skin and circulatory system (heart, blood vessels, etc.).

The main ocular problems associated with diabetes stem from blood vessel changes. There may be hemorrhaging in the back of the eye (retina) and spreading into the vitreous. This eventually results in the growth of new blood vessels and eventual retinal detachment. An important note is that the patient's complaint of "flashing lights" is many times indicative of a retinal detachment. The extent of

impairment may range from being unnoticeable to total blindness and will vary from one episode to the next of hemorrhaging. Laser beam surgery will sometimes retard the progression by sealing off the hemorrhaging blood vessels, but this is not always successful. Visual acuity will be reduced according to what parts of the retina are affected. In the more advanced stages the patient will show varying visual field losses due to retinal detachments and hemorrhaging. There may be a loss of color vision if the macular (central vision) area is affected. Glaucoma may develop as a result of the growth of new blood vessels extending from the back towards the front of the eye into the vitreous. Diabetics are also predisposed to cataracts and may require surgery for removal. This is very difficult due to the poor wound healing capabilities of diabetics. Some of the earliest observable signs of diabetes are seen in the eyes, specifically the changes in the blood vessels in the eye and the development of cataracts in the diabetic patient.

Retinitis pigmentosa is a retinal degeneration of unknown etiology, it is an inherited disease and predominantly attacks males. The rods of the retina are slowly destroyed with secondary atrophy of the remainder of the retina. These changes begin in the mid-periphery, sparing the macula and extreme peripheral areas until later.

Night blindness, the first symptom of retinitis pigmentosa, usually occurs in early youth. Thereafter, the visual fields gradually constrict to become disabling in the fifth or sixth decade, at which time macular vision may also be lost. Photophobia is usually reported. There is no specific therapy for retinitis pigmentosa, genetic counseling should be offered in an attempt to prevent propagation of the disease, and/or prepare patients for the likelihood of their offspring having retinitis pigmentosa.

Retinal detachment is an ocular condition in which the retina, which is responsible for vision, is separated from its supporting structures. The detached portion of the retina atrophies due to lack of nourishment. This results in a "blind area" in the field of vision corresponding to the area of the detachment. It can occur in a great variety of forms, and is associated with many different causes. The type and cause of the detachment will to a large extent determine the treatment procedures.

Visual symptoms may be variable in cases of retinal detachment. The appearance of flashing lights accompanied by sharp, stabbing eye pain is an extremely significant indication of a recent or impending detachment. Such complaints should always be followed up by a careful ocular examination. Visual acuity may be markedly decreased if the

macula is involved. Swelling of the retina may occur in such cases, causing complaints of micropsia (objects appear smaller when viewed with the affected eye). Color vision may also be impaired in cases of macular involvement.

The examining doctor may first notice a retinal detachment when performing ophthalmoscopy. The retina in a normal eye is transparent. In the case of a detachment it appears milky white. A careful internal eye exam will determine the extent and severity of the detachment.

Most detachments occur as the result of an accumulation of fluid under the retina separating it from its supporting structures. This may be due to many other ocular or general physical conditions. An example of this would be diabetes. In very advanced cases of diabetes, retinal detachments are rather common.

A sharp blow to the head may be sufficient to cause a retinal detachment or tear. Surgery is generally necessary in such cases particularly if there is a hole or break in the retina. This may be accomplished by various surgical means, the most recent being photocoagulation (application of a laser beam to seal the retina to its supporting structures) and cryosurgery, which involves using an extremely cold probe to freeze the retina to its underlying structures. These procedures are generally successful, however, it is very

difficult to predict how much vision can be restored. The length of time between the detachment and surgical procedures is crucial. In many cases, post-surgical improvement is rather slow. It may take months before vision reaches its best level of improvement.

Toxoplasmosis is a severe intraocular infection caused by a small organism called the *Toxoplasma gondii*. This condition may be congenital, in which case the fetus was exposed to the organism prior to birth, or it may be acquired. The acquired form is less severe. The organism may be transmitted through contact with such domestic animals as cats or by ingestion of rare meat that contains the organism. Since the organism is susceptible to heat, cooking will generally insure against infection in this manner.

Histoplasmosis is a fungus-like infection that can affect various parts of the body. It is caused by inhalation or ingestion of spores of an organism called the *Histoplasma capsulatum*. These spores may be found in the dried excrement of animals. Also, the condition is more common in the mid-western portion of the country.

The condition is life-threatening, and in cases of ocular involvement, can threaten vision. General symptoms may be similar to pneumonia or tuberculosis. The condition affects the eye in the form of scattered areas of inflammation

(lesions) in the back of the eye. These are generally first detected during an ophthalmoscopic exam in the absence of any external signs or symptoms. The lesions appear similar to those found in patients with toxoplasmosis.

The effect on vision will depend upon the location and extent of the lesions. If the infection develops in the macular area, the visual impairment will be great. Such patients would have greatly reduced visual acuity both at distance and at near and a central scotoma. Color vision may also be deficient since the macula is responsible for color discrimination. The decreased visual acuity may result in the development of a squint.

Lesions in other portions of the retina would be less severe. A blind area (scotoma) in the visual field would correspond to the area of the lesion or lesions. Such blind areas, depending upon their size and location, may cause mobility problems for the patients. They may also interfere greatly with reading if they involve all or part of the area of central vision, especially in the right field.

Senile macular degeneration is a very common disease process among people 65 years and older. It can also occur in young people who inherit it as juvenile macular degeneration. The condition is almost always bilateral,

although at first only one eye is significantly involved. Progression is gradual, but the end result usually is a dense central scotoma. Patients should be reassured that the disease does not often lead to total blindness, although central vision may be extremely poor. People will vary in their reports of problems with photophobia and glare. The major problems with the older patient is to teach him to view eccentrically, or look around the central blind spot.

Albinism is a congenital condition characterized by a very fair complexion, usually platinum blonde hair and light-colored eyebrows. This is due to a lack of pigment or an inability of the body to produce pigment. It may involve all pigmented structures including the hair, skin and eyes. Such individuals are in general fairly easy to spot, however, in many cases the condition is incomplete, showing a deficiency of pigment only in certain structures. In cases where essentially only the eyes are affected, it is termed ocular albinism. Carriers of this hereditary condition may exhibit minor forms of albinism.

Affected individuals will generally be very photophobic. This can many times be corrected with appropriate illumination control aids. Lighting conditions are very important to albinos. Nystagmus may be noticeable. This is thought to be in part due to an underdeveloped macula. Albinos

many times have very high refractive errors and may exhibit high amounts of astigmatism. Because the macula did not develop however, they do not usually show the expected increase in acuity when the refractive error is corrected. Visual fields are generally normal or slightly reduced if there are no other ocular conditions present. Mobility skills are minimally affected in relation to the level of visual acuity.

Achromatopsia is a hereditary condition in which the individual is unable to distinguish colors (total color blindness). This is due to a malformation of the neural portion of the eye that normally distinguishes colors. The retina contains two types of neural receptors: cones, which allow one to see under lighted (photopic) conditions; and rods, which allow one to see under dark (scotopic) conditions. Achromats have improperly developed cone systems and thus are sometimes referred to as rod-monochromats. Since cones are the major receptor form in the macular area, they are responsible for normal central vision. They also function in color determination. A deficiency in the cone system (such as that seen in achromatism or any ocular condition that affects the macular area) results in decreased visual acuity (generally to a level of about 20/200) which cannot be corrected with conventional spectacles, and an inability

to discriminate colors. Due to this decreased ability to function adequately under illuminated conditions, these individuals many times are extremely sensitive to lights (photophobia), and may exhibit nystagmus (rapid, involuntary movement of the eyes). The nystagmus and photophobia are significantly reduced under dark conditions, thus the application of sunglass aids or shields are many times beneficial. They are also known to reduce in severity with age and many times are minimal by the time the individual reaches the mid-teen years. These patients may compensate for their color-blindness by detecting brightness or intensity differences and associating appropriate color names with these differences.

Visual fields are generally normal in the absence of any other ocular abnormalities. Mobility skills are basically related to the level of visual acuity. Near vision is generally less affected than distance vision.

The optometrist or ophthalmologist will generally detect this condition during an exam with any type of color vision screening device. Further evaluation should include electrodiagnostic testing. This test is very important in determining the extent and prognosis of the condition.

A coloboma is a notch or cleft appearance of the pupil. The pupil in a colobomatous eye has a characteristic tear-

drop shape. This is due to a malformation of the eye during development and may extend from the back of the eye where the optic nerve enters the eye, all the way up to the iris or colored portion of the eye. It is a congenital condition. The location and the extent of the coloboma depend upon the period of development in which it occurred. It is generally bilateral and may be associated with other conditions such as, microphthalmia (small, underdeveloped eye), abnormalities of the head and face, multiple fingers or toes (polydactyly) and mental retardation.

If the retina (back of the eye) is involved, there is an associated field loss, since the coloboma affects the lower portion of the eye. This field loss will not significantly impair the patient's mobility skills, but may present problems for the patient in detecting low overhanging obstructions such as tree limbs or doorways.

An affected eye may develop a strabismus (turning in or out of the eye) and or nystagmus (involuntary movement of the eyes). This is in general, secondary to the decreased visual acuity. The patient may also experience glare problems due to the tear-drop shaped pupil. This can many times be alleviated with sunglasses. If the pupil is cosmetically unattractive, the patient may be fit with a contact lens to make the pupil appear more normal.

Optic atrophy can be caused by a multitude of diseases and can also be inherited. The optic nerve head is pale when looked at by the doctor and the patient complains of a visual acuity loss along with field changes. It is rarely possible to treat optic atrophy unless the underlying cause can be found early and treated effectively. A good example is glaucoma which eventually leads to optic atrophy and then total blindness. By treating glaucoma in its early stages and keeping it under control, you can generally prevent any further optic atrophy. Optic atrophy can create a variety of visual field and ocular losses from barely discernable to total blindness.

Some syndromes or diseases that might be seen a little more commonly in a low vision setting are Congenital Rubella, Down's Syndrome and Marfan's Syndrome:

Congenital rubella is a syndrome resulting from the exposure of a fetus to the rubella virus. The virus is transmitted to the fetus through the placenta by the mother. The severity of the resultant defects depend to a great extent on how early in the pregnancy the virus was introduced. The first trimester (3 months of pregnancy) is critical, with the first four weeks being particularly so. The mechanism for the defects is believed to be due to the ability of the virus to interfere with cell division and multiplica-

tion causing nonspecific chromosomal changes.

Classically the rubella child exhibits eye, ear and heart defects, however other organs are commonly involved. Generally the ocular abnormalities are quite evident. Congenital glaucoma (high intraocular pressure causing the cornea to take on a hazy, opaque appearance), and congenital cataracts give the eyes a hazy, whitish appearance and prevent the examining doctor from viewing the back of the eye. The eyes are generally very small (microphthalmia). Viral inflammation of various parts of the eye may be added complications. The back of the eye sometimes takes on an appearance similar to retinitis pigmentosa although the condition is nonprogressive and does not in itself seem to interfere with vision. (There is some indication that further deterioration will occur as the child grows.)

Visual acuity is generally reduced due to the cataracts and opaque cornea. Possible congenital glaucoma will also result in severely constricted visual fields. Nystagmus may be present as well as an obvious squint. Mobility skills will depend greatly upon the extent of ocular damage as well as other physical problems.

The management of such patients is rather discouraging. Cataracts and glaucoma can be treated surgically, however, the prognosis is poor. Viable virus cells persist in the

lens and may cause a subsequent inflammation as a result of surgery. Severe complications occur in 35% of rubella eyes after cataract extraction.

An adequate vaccination is the only treatment to prevent maternal infection during pregnancy. Without immunity, there is no sure way to prevent the viral infection.

Down's syndrome is a congenital condition due to a genetic abnormality. Such individuals have an extra #21 chromosome, thus the name trisomy 21. This condition is also known as mongolism due to the facial appearance of affected individuals. These patients are generally short and squat with narrow, slanted eyes and a thick, protruding tongue. They are generally mentally retarded with an I.Q. in the 20-50 range. Cardiac abnormalities are also prevalent.

Ocularly, these patients may demonstrate an obvious squint and nystagmus. Many are highly myopic (nearsighted) and almost half have congenital cataracts. Surgery is not generally performed due to various complications. The level of measurable visual acuity will depend upon the above as well as on the intelligence level.

Marfan's syndrome is a congenital abnormality of the connective tissue of the body. Affiliated individuals are generally characterized by long thin fingers and toes as well as a generalized elongation of the extremities. Cardio-

vascular problems are common among such individuals.

This condition has many ocular complications, the most usual being dislocation of the lens of the eye. This can cause a general blurring of vision or, in some instances, may cause double vision in one or both eyes. When the patient is looking through the lens he may be near-sighted or emmetropic (normal vision). However, he is much more far-sighted when looking around the dislocated lens. Such a condition will often result in decreased visual acuity even with conventional correction. These individuals may also have a displaced or multiple pupil.

Externally, an individual with Marfan's syndrome may demonstrate heterochromia iridis (different colored eyes), and a bluish sclera (the normally white portion of the eye). Nystagmus (rapid involuntary movement of the eyes) may be evident also.

Conclusion:

This reviews some of the more common conditions expected in the low vision service. From a functional standpoint every disease produces problems with either:

1. general loss of visual acuity but full visual fields
2. loss of central visual acuity with resulting central scotoma or field loss

3. loss of peripheral vision with or without accompanying loss of visual acuity

If the ocular problems are looked at from the functional implications discussed, it will be easier for the individuals providing services to develop and carry out meaningful plans of vision rehabilitation.

DO NOT TREAT JUST THE DISEASE - WORK WITH THE PERSON.

FUNCTIONAL IMPLICATIONS OF COMMON PATHOLOGIES OF THE EYE

by

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FUNCTIONAL IMPLICATIONS OF COMMON PATHOLOGIES OF THE EYE

When thinking of problems associated with visual impairment, one's first thoughts often focus on reduced visual acuity, possibly constricted visual fields. When considering treatment options, we usually concentrate on optical aids. Make the image larger, the person will see better, the problem is solved.

Reduction of visual acuity or constriction of visual fields can have a profound effect on an individual's visual functioning. The reduction can be so great as to require major changes in the person's lifestyle, travel methods, work habits and overall functioning. Optical aids can be of great benefit to solving these life skill problems. However, just an optical aid, with or without adequate training, is not the only answer. There are many functional problems, caused by the reduction of visual acuity or constricted visual fields, which cannot be totally solved with optical aids. For example, photophobia, nystagmus, poor night vision and lack of depth perception are only a few of the common problems which cannot be entirely managed with optical aids.

This paper is divided into three components. The first is a brief review of definitions of common pathologies.

The second component is a chart which indexes the pathologies and commonly associated functional problems. The third component examines the common functional problems associated with the pathologies. These problems are then followed by suggestions for remediation which may be used to assist the person in adapting to the effects of the eye condition.

Optical aids (i.e., microscopes, telescopes, etc.) are not mentioned unless they perform a unique role in the functional management of the individual's problem (i.e., fresnel prisms, reverse telescopes). A comprehensive low vision examination, with prescription of commonly used optical aids is assumed.

DEFINITIONS OF COMMON EYE PATHOLOGIES

ALBINISM

Albinism is a congenital condition characterized by lack of pigment in the skin and hair, and lightly colored irides. It generally results in photophobia and high astigmatic errors. Albinism can be a complete or a partial lack of pigment affecting various structures. In cases where only the eyes are affected, the pathology is referred to as ocular albinism.

ANIRIDIA

Aniridia is a failure of the iris to fully develop. It results in difficulty adapting to various lighting conditions because of the inability to control the amount of light entering the eye. With this condition, the pupil of the eye may appear unusually large.

APHAKIA

Aphakia is the absence of the lens in the eye, resulting in the inability to accommodate.

CATARACT

A cataract is any opacification of the lens. Depending upon location, extent, and density of the opacification, various ranges of reduced visual acuity and field losses can be expected.

NYSTAGMUS

Nystagmus is involuntary eye movement of unknown etiology, resulting in decreased visual acuity. It is generally associated with underdevelopment of another part of the eye.

DIABETIC RETINOPATHY

When diabetes affects the eye, diabetic retinopathy occurs and causes the hemorrhaging of blood vessels in

the retina. This results in decreased acuity and fluctuating vision.

GLAUCOMA

Glaucoma is increased intraocular pressure caused by an imbalance in the production and/or flow of aqueous fluid. It results in a gradual decrease in the peripheral and, if uncontrolled, central retinal areas.

HEMIANOPSIA

A hemianopsia is the loss of approximately half the field of vision in one or both eyes. It is most commonly associated with strokes or head trauma.

MACULAR DEGENERATION

Macular Degeneration is any destruction or degeneration of the macular area. Macular degeneration is characterized by loss of central visual field and reduction of visual acuity.

OPTIC ATROPHY

Optic atrophy is a condition which affects the optic nerve fibers, causing varying results such as reduced visual acuity, defective color vision, difficulty with night vision, etc. Results will depend on the extent and location of the atrophy.

PATHOLOGICAL MYOPIA

Pathological Myopia is extreme nearsightedness due to lengthening of the eye and resultant stretching of the retina. It is commonly associated with a high incidence of retinal detachments.

RETINITIS PIGMENTOSA

Retinitis Pigmentosa is a degenerative, pigmentary retinal condition resulting in a gradual decrease of visual functioning. D generation usually begins in the peripheral retinal area, causing reduction in peripheral and night vision, and may progress to eventual total blindness.

Ocular Pathologies and Common Functional Problems

<u>PATHOLOGY</u>	<u>SECONDARY CONDITIONS</u>	<u>PROGNOSIS</u>	<u>COMMON FUNCTIONAL PROBLEMS</u>
Albinism	Nystagmus	Non-progressive	Glare/photobia Nystagmus Congenitally poor V.A. acuity
Aniridia	Glaucoma Cataracts Nystagmus Displaced lens Corneal Opacification	Dependent on extent of underdevelopment	Poor light adaptation Glare/photophobia
Aphakia	Glaucoma	Non-progressive	Peripheral field distortions Loss of accommodation Poor depth perception
Cataracts	Glaucoma	Progressive to total opacification	Scotomas Glare/photophobia Constricted pupil
Nystagmus	Usually is an accompanying condition	Non-progressive	Possible fixation diffic. Reduced acuity
Diabetic Retinopathy	Glaucoma, Retinal detachments Cataracts	Progressive	Gradual loss of vision Fluctuating vision
Glaucoma		Progressive and non-progressive	Constricted visual fields Night blindness Light adaptation Glare/photophobia Effects of medication
Hemianopsia		Non-progressive	Loss of half of visual field Reading
Macular Degeneration	Cataracts	Progressive and non-progressive forms	Loss of central vision Scotomas
Optic Atrophy		Stable	Scotomas
Pathological Myopia	Retinal Detachments, Cataracts, Macular Hemorrhaging	Progressive	Peripheral field distortions
Retinitis Pigmentosa	Cataracts, Glaucoma	Progressive	Constricted visual fields Glare/photophobia Night blindness

FUNCTIONAL PROBLEMS AND SUGGESTIONS FOR REMEDIATION

EFFECTS OF MEDICATION

Some medications produce ocular side effects. Familiarization with drugs taken for treatment of an ocular pathology, as well as drugs prescribed for any systemic condition, should be stressed for knowledge of possible visual side effects. Common side effects include dilated pupils, sluggish pupils, blurry and/or fluctuating vision. (i.e., glaucoma medications such as pilocarpine produce an immediate constriction of the pupil, followed by gradual dilation to normal limits). When possible, training sessions should be scheduled at various times of the day to determine the effect(s), if any, drugs have on the trainee's visual abilities.

FLUCTUATING VISION

Many individuals, particularly diabetics, experience hourly, daily or weekly fluctuations of vision. This can be frustrating for both trainees and instructor. Experiencing the persons use of vision at both extremes (best and worst) is critical to an accurate understanding of the extent of the fluctuation, as well as for effective planning of remedial techniques. Some persons may exper-

ience fluctuating loss of vision to the extent that certain visual tasks (i.e., reading, writing, etc.) may be extraordinarily difficult or impossible to accomplish. These activities may need to be done when an individual reports clearest vision. For example, sewing, or other critical eye-hand tasks may need to be completed when the person's vision is the clearest. If the low vision person experiences vision fluctuations of less magnitude, varying the optical aid correspond with the clarity of vision may enable that person to perform needed tasks. For example, one may read with a +10 lens on a good day and a +16 lens on a bad day.

GLARE AND PHOTOPHOBIA

Clinical Definitions:

Glare - relatively bright light, or the dazzling sensation bright light, which produces unpleasantness or discomfort, or which interferes with optimal vision (Schapero, Cline, Hofstetter, 1968).

Photophobia - an abnormal intolerance or fear of light (Schapero, Cline, Hofstetter, 1968).

Functional Definitions:

Glare - light rays reflected from a lightly colored object, (i.e., white walls) glossy paper (i.e., magazine) or other highly reflectant surface (i.e., water) causing eye squinting, discomfort and generally, reduced visual acuity.

Photophobia -light rays from the direct source produce an intensity (foot candles) which exceeds the retina's capacity to absorb light. Bright sunlight, high wattage light bulbs, etc. cause adverse conditions for the photobic individual.

Glare and photophobia problems may have a profound effect on an individual's visual functioning. Some individuals with proper lighting conditions, can perform most activities visually (i.e., read, cook, write, travel) but can be functionally blind with adverse lighting conditions (i.e., a person with albinism on a bright day). For the majority of individuals, comfort and increased visual clarity are attained when glare and photophobia are minimized.

A thorough discussion of the trainee's preferred lighting situation (amount of light, positioning of light) should occur prior to any training. This enables the instructor to develop an indepth understanding of the individual's illumination needs and emphasizes the importance of lighting to that person.

A variety of options, alone or in conjunction with each other, can minimize the effects of glare and photophobia. Seven options are listed and described below:

1. Absorptive Lenses

Photogrey and photosum lenses adjust to any variation of illumination. These lenses are chemically treated to

darken as the environment illuminates and to become lighter as the environment darkens. This helps maintain a consistent level of light entering the eye. NoIR and Olo absorptive sun lenses are very useful for the photophobic person. These lenses have side shields and a top shield which eliminates most peripheral light rays. These lenses are manufactured in a variety of light transmissions and shades.

2. Hats, Visors, Umbrellas

Outdoors, bright sunlight, and even cloudy days, may cause glare and/or photophobia. Using a wide-brimmed hat, visor, or umbrella can significantly decrease the amount of peripheral light contacting the person's eyes.

3. Color Filters

Sheets of acetate placed over reading materials can reduce glare and increase contrast. Two colors of particular benefit are "straw yellow" and "dark yellow."

4. Non-Glossy Paper

Magazines and selected texts use highly reflectant paper. This is difficult for the light sensitive person to read. Often the use of color filters can resolve this problem. When possible, select reading material printed on non-glossy paper.

5. Typoscopes

The typoscope is a black card with a cut-out window or slit which is placed over printed material. Typoscopes can be made of black, non-glossy construction paper or cardboard. The size of the card, length and width of the window can vary depending on the size of the page and size of the print. The typoscope is useful for providing maximum illumination with minimum glare. Using this non-optical aid minimizes the amount of reflectant surface, the major cause of glare.

6. Seating Arrangement

If there are windows present, the person's positioning in relationship to the windows, as well as the time of day when the trainee will be using the room, should be considered. For example, if the windows are on the east side of the room, the sun will illuminate the room in the morning more than the afternoon. Observe to determine how the light illuminates the room. Use those observations to decide where the best positioning may be. For example, positioning the person so that the sun shines from behind, and appropriately illuminating the subject matter, can significantly minimize glare. Continual experimentation and observation at various times of the day is the best

approach.

7. Control of Quality, Quantity, and Positioning of Light

As previously discussed, lighting is the critical factor for optimum visual functioning, with or without an optical aid. When reading, watching television, etc. an incandescent, 100 watt bulb in a flex-arm or gooseneck lamp affords a flexibility in controlling these factors. If the person requires more or less illumination, adjust the lamp position (close, far, over right shoulder, over left shoulder, etc.) according to individual needs. If this is still unsatisfactory, a high wattage bulb (150-200 watt) or low wattage bulb (40-75 watt), in conjunction with the appropriate positioning, may be used. There is no one answer to solving a person's illumination needs. Only through experimentation with positioning, wattage, and quality (i.e., white, frosted, cool white) may optimum lighting be achieved.

LIGHT ADAPTATION

Some low vision individuals must pause for approximately one to twenty minutes when moving from outdoors, on a bright day, to an indoor environment. In more acute cases, the person must pause when changing rooms or

moving outdoors from sun to shade. One lighting condition may be satisfactory, with the slightest variation greatly affecting the person's visual functioning. Photogrey or photosun lenses, which adjust to varying lighting conditions, can decrease the adaption time. For particularly bright environment, these lenses, in conjunction with absorptive lenses such as NoIR's or Olo's, hats or visors, may further minimize the time required to adapt when moving to less bright areas. For example, on bright sunny days, photosun lenses coupled with absorptive lenses may significantly decrease adaption time for the trainee who enters an indoor environment from outside. It is difficult to totally eliminate this problem due to the multitude of variations in environmental lighting conditions. However, through experimentation with various aids, adaption times can be reduced significantly.

NIGHT BLINDNESS

Most pathologies characterized by constricted visual fields are associated with night blindness. Rods, which provide peripheral vision, are also responsible for night vision. As a person's rods cease to function, the visual fields constrict. These individuals find travel at night or in dimly illuminated areas difficult. The detection of

obstacles, curbs, or stairs may need to be done tactually.

Three available options can assist the person with night blindness:

1. Portable Light Sources

The use of any portable light may provide sufficient illumination to perform tasks or travel in a dark or dimly lit area. Penlights can be most helpful for reading menus in a dimly lit restaurant, locating keys at night, etc. Flashlights may provide sufficient illumination to locate obstacles in the line of travel. Scanning with the light from side to side allows the person to illuminate and visually clear a path. Portable underwater lights are now being manufactured as wide-angle mobility night lights which strap over the shoulder and rest at the person's hip. The person grasps a handle which controls movement of the beam. This wide-angle light may be more effective than a flashlight, because of its wide beam and intense illumination. Persons may find the increased illumination provides better visual acuity. Also the wide beam of light covers a larger field of view than a flashlight. This enhances one's ability to obtain visual information, and increases safety and assurance in traveling at night.

2. Nightscope

This device utilizes photodiodes in a light amplification system. The nightscope is a hand held device, similar in size to a 6X-8X Selsi monocular telescope. In a darkened environment, the individual can view through the nightscope to visually locate obstacles and detect stairs or curbs. Travel, while constantly viewing through the device, may be cumbersome and not very practical. The nightscope is best used as a short-term spotting device. It also has a life-span which varies, dependent on the amount of light entering the photodiodes and the number of hours used. The brighter the environment, the faster the system wears down. The darker the environment, the longer the system lasts.

3. Long Cane Skills

The trainee with night blindness has serious mobility problems in dark and dimly lit areas. This person may have difficulty locating and determining the depth of a curb, avoiding obstacles in the line of travel or determining position in space (orientation). A traditional program of Orientation and Mobility is strongly recommended for this person. Long cane instruction will enable the individual to locate obstacles and curbs non-visually, while permitting the trainee to use visual cues for orientation and pleasure

purposes.

The person may function best at night by using a light or nightscope in conjunction with a cane. For example, the nightscope could be used to determine which side of the street presented the fewest obstacles and the approximate location of any obstacles on the block. While traveling on the block, the person would utilize a long cane to detect the exact location of obstacles and any uneven terrain or curbs. Combining the options in this way provides optimum safety and efficiency.

NYSTAGMUS

The individual with nystagmus may experience difficulty with fixation, causing reduced visual acuity, and difficulty when using optical aids. By utilizing various head and eye positions, one can decrease the amplitude of the nystagmus for short periods of time. Frequently the visual acuity is improved when the nystagmoid movement slows down. To assist in locating the area of decreased amplitude (null point), instruct the trainee to stare at a penlight or object held 20" in front of his/her face. The instructor slowly moves the penlight in all areas of the trainee's field of view, as the trainee follows the penlight with eye movements only (head is still). Observe the trainee's

nystagmus to locate the null point or area of slowest eye movement. This area is usually found in the temporal gaze, however, all areas of the visual field should be evaluated. Using the same activity, encourage the trainee to use a combination of head or head and eye movements to find the null point. Evaluate and discuss each method, until finding the most comfortable position in which the null point can be attained.

Some people realize that an improvement in fixation ability and visual acuity is obtained when the null point is used. Many individuals can be trained to successfully locate and utilize the null point for short term tasks. Trainees should be encouraged to describe and demonstrate the use of the null point for various tasks.

PERIPHERAL FIELD DISTORTIONS

High plus lenses (cataract glasses) and high minus lenses, used for strong myopic refractive corrections are characterized by thickness of the edge of the lens. This thickness causes peripheral distortion. Distortions in the field result in difficulties with depth perception, eye-hand coordination, reduced visual acuity, and constricted peripheral fields. The most appropriate remediation for this problem is the prescription of contact lenses. Contacts

will significantly minimize the characteristic lens design problems, and may improve visual acuity and peripheral awareness. Discuss with the local eye care practitioner the possibility of a contact lens fitting. If contact lenses are contraindicated, a person should increase head movement and decrease eye movement. This will minimize effects of the lens' peripheral aberrations. On stairs, encourage the trainee to view through the center of the lens. When crossing streets or making critical eye-hand coordination decisions the eyes should always be aligned with the center of the lenses. This will provide the best visual acuity with the least possible distortion.

SEVERELY CONSTRICTED PERIPHERAL FIELDS

The person with severely constricted peripheral fields may experience difficulty traveling in dark, unfamiliar and/or crowded settings. It is often difficult for this individual to scan the environment to adequately detect, then absorb, all relevant information (information needed to travel safely). This problem area is one of the most difficult to remediate, due to the multiplicity of variables which may alter the program options. For example, individuals with similar field constrictions may have visual acuities ranging from 20/20 - 20/700. The individual with 20/20 may function

as a sighted person except for a few specific instances, such as crowded social gatherings or in unfamiliar areas. The individual with 20/700 may experience difficulty traveling in all settings but the immediate indoor home environment. Quality of visual scanning patterns and the person's self-image (blind vs. sighted) also play a significant role in selecting which option(s) is best for the trainee.

Four options helpful in remediating difficulties with severely constricted visual fields are:

1. Long Cane Skills

The trainee with severely constricted visual fields (10 or less) and poor visual acuity (20/200 or less) may not be able to benefit from an optical aid or visual training program. Introducing the techniques of orientation and mobility may improve the trainee's travel abilities in crowded or unfamiliar environments. Even an individual with 20/20 visual acuity and severely constricted fields stands to benefit greatly from mobility training, especially in the area of depth perception and avoiding contact with unnoticed people and objects.

2. Fresnel Prisms

A fresnel prism is a series of prisms, side by side, compressed into a flat, plastic membrane. The prisms bend light rays, causing objects viewed to be displaced. When

the trainee views objects through the prisms, the apparent location is displaced from the actual location. The degree and location of the displacement is dependent upon the power and position of the prism on the individual's prescription or plano lens. With the prism placed on the outer edge of a person's glasses, a simple eye movement into the prism area enables an individual to view objects and people approximately 60° - 70° in the periphery. Without a prism, this individual would have to make a gross head turn to the side to pick up the same information. In addition, individuals with severely constricted fields may not notice other people passing beside them until they are approximately 3 - 10 feet in front of them. With a prism, however, those same individuals will be able to locate persons passing by within approximately $1/2$ - $1-1/2$ feet. Fresnel prisms can be of tremendous benefit for increased independent mobility.

3. Reverse Telescopes

A reverse telescope minifies objects in the visual field, allowing a person to perceive peripheral information with minimal eye movements. Reverse telescopes are used in two forms, hand held and spectacle mounted in a bioptic system. A hand held reverse telescope is any telescope turned around so trainee places objective lens to the eye. The low power telescopes (2.5X, 2.8X, and 3X) are generally used. They

can be used to locate lost objects in a close area such as table or desk top, or for quick spotting of any area to obtain a wider picture of one's surroundings. The high power telescopes greatly reduce the trainee's visual acuity, minimizing the benefits of the increased field. The bioptic reverse telescope is a spectacle system designed with a reverse telescope located in the upper third of the carrier lens. The individual views under the telescope (through the carrier lens) for critical judgements of distance or depth. Periodic scanning into the reverse telescope supplies the trainee with a panoramic view of the area to locate obstacles, people, etc.

4. Increased Head and Eye Scanning

Quality head and eye scanning, with or without an optical or non-optical aid can enhance a person's ability to obtain visual information. Efficient scanning is a skill that often must be taught and reinforced by the instructor. For example, training activities such as holding objects in random areas of the trainee's visual field while trainee scans to detect the object, or instructing trainee to walk down a long hallway scanning left to right to locate door openings and room numbers are activities which encourage maximum scanning.

Combining head and eye scanning with one of the previously mentioned options can provide the trainee with more effective

systems to obtain information for safe and efficient travel. For example, the trainee may use fresnel prisms and head/eye scanning to detect obstacles or objects on the left and right side. The introduction of a long cane to detect curbs, stairs and low lying objects can provide maximum detection of obstacles and drop-offs, when used in conjunction with efficient scanning in and out of the fresnel prism area.

SCOTOMAS

Individuals with scotomas, or blind spots generally have difficulty doing tasks which require good visual acuity, such as reading the newspaper, writing a check, identifying peoples faces across the room, reading a street sign, etc. The prescription of an optical aid is often the first step toward remediating this problem. However, exposure to "looking around the scotoma" (eccentric viewing) may be necessary for the person to attain optimal visual functioning. One method of eccentric viewing training is documented by Goodrich and Quillman (1977). This approach utilizes flashes of light to produce an afterimage which the trainee learns to use for critical viewing tasks. The method requires frequent training sessions. Another method of introducing eccentric viewing begins with a discussion of the trainee's

visual fields. Show the visual field chart to the trainee and explain the functional loss. Next, provide a functional experience of the field loss. Sitting approximately one meter from trainee, have trainee fixate on your face and describe which parts of your face are missing. Instruct trainee to fixate on various parts of your face (moving the scotoma) to discover which eye position provides the best subjective visual acuity. Encourage trainee to locate the same eye position while fixating on various targets at near, intermediate, and distance. Provide trainee with a verbal description of all eye movements and eye positions.

When a near optical aid is introduced, (e.g. microscope, stand or hand held magnifier) have trainee practice moving the scotoma by fixating on spaced single letters. Eliminate eye movement, once the best area of vision is found, by moving the page. As proficiency increases, practice fixating on words. Gradually decrease the letter size, then introduce sentences.

When a telescope is introduced, the trainee must locate and maintain fixation while viewing through the optical aid. Observe trainee's eye position and provide a verbal description of the eye position to assist trainee in trying to find the area of best visual acuity (Note: refer to localization problems under "TRAINING WITH HAND HELD DISTANCE OPTICAL AIDS").

LOSS OF HALF THE VISUAL FIELD

The person with a hemianoptic defect may experience reading and/or travel difficulties. This person generally has excellent visual acuity but a total loss of vision on the affected side of each eye. The use of fresnel prisms can assist with solving mobility problems. By placing a fresnel prism in front of the absent visual field, the person can efficiently detect stationary objects or moving people, etc., with only a slight eye movement in the area of the field loss. This procedure can greatly enhance an individual's mobility skills.

Reading for this person often becomes a difficult task. Dependent on the area of field loss, the following problems may be exhibited.

1. Left Hemianopsia - This individual may read from the middle of the page to the end, then back to the middle. The left side of the page is not seen and one's place in the written text is often lost.
2. Right Hemianopsia - This individual may read from the left margin of the page to the middle, then back to the left margin. The right side of the page is not seen, as the person often reads into

the scotomous area.

Individuals with a right hemianopsia often have a more difficult time than those with a left hemianopsia. Reading is a task requiring fixations and saccadic eye movements from left to right. The person with a right hemianopsia performs these skills into the blind area. This is more difficult than reading from an area of field loss into the viable field.

The use of a marker system such as a paper clip, bold straight line, or the trainee's thumb can be used to indicate the beginning or end of a line. Even with a marker system, reading speed is significantly reduced. For this reason, some people benefit from changing the orientation of the book to either a verticle or upsidedown reading style. This method requires extensive practice but can be very successful for increasing reading speed.

APPENDIXWide Angle Mobility Nightlight

Fallow Industries
Department E
333 Olo County Road
Belmont, Ca. 94002

I.T.T. Nightscope

Contact Retinitis Pigmentosa Foundation
National Headquarters
8331 Mindale Circle
Baltimore, Md. 21207

NOIR Sunglasses

Recreational Innovations
P. O. Box 159
South Lyon, Mich.

Olo Sunglasses

Olo Products, Ltd.
Box 613
Manhasset, N.Y. 11030

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THE COMPREHENSIVE CLINICAL EXAMINATION
OF THE VISUALLY IMPAIRED

by

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CLINICAL EXAMINATION OF THE VISUALLY IMPAIREDIntroduction

This paper will review the main components of the most important parts of the clinical low vision examination process. It includes the social service and clinical histories, as well as actual examination techniques. It is intended to give the professional working with low vision persons an understanding of the comprehensive clinical low vision examination. The actual tests will vary from doctor to doctor and for different patients.

The goal of the low vision examination of the visually impaired patient is to improve his ability to use his vision to create independence and to enable the person to better cope with the demands of ordinary life.

The entire examination should be success-oriented. The typical low vision patient does not have to be convinced that his vision is poor; rather, he has to be convinced that he has vision worth using. The doctor must constantly reinforce this throughout the testing procedures.

The entire examination procedure should be broken into a minimum of three visits: 1) to determine any pathological and refractive conditions, and to assure that they are

stable; 2) to avoid patient fatigue; and 3) to provide time for interdisciplinary communication between the doctor and other vision rehabilitation specialists involved.

First Visit

Materials:

At the time of their first visit, the patients should be instructed to bring their present optical aids. They should also bring samples of materials they wish to read or work with if possible; a list of tasks they wish to do; and a list of questions to which they desire answers. The low vision rehabilitation worker can help make the examination successful by reminding the patient to bring these materials to the clinic. Also, they can help by providing the client/patient with a good explanation or description of the low vision examination they will be receiving at the clinic.

Preliminary Evaluation:

Preliminary evaluations regarding the patient's present uses of aids and/or vision in the home/educational/work/leisure setting must be completed. A discussion of the results of these evaluations between the doctor and the low vision rehabilitation workers must occur prior to the examination.

History:

The history is the first interaction the doctor has with

the patient. The history must be extensive, but it doesn't have to be done completely by the doctor. This information will probably be gathered by the low vision worker, a social worker, the doctor, a technician and/or any combination of people. Some of the low vision rehabilitation workers will most often gather this data, others just don't have the time. What's important is not who collects the data - rather that it was collected and is available to the doctor before extensive testing is conducted.

A typical case history can include:

Living Situation:

Married Single Other

Dependents:

Discuss and verify sources of financial support:

Other agency involvement:

Medical Visual History:

When did you first notice trouble with your vision?

OD:

OS:

What did you do when the problem first arose?

What is your understanding of the nature of your visual condition?

Have you had any operations or do you take any medications for your eyes?

Does your vision fluctuate?

Do you ever have pain in your eyes?

What kind? How often? Which eye?

Does anyone in your family have trouble with his/her sight?

CATARACTS GLAUCOMA DIABETES VASCULAR OTHER

Do you have any other medical problems?

Do you take any medications?

Are you interested in genetic counseling?

Work/Education/Activity History:

What grade did you complete in school?

List any special training:

If still attending, do you have any visual problems at school?

Who is your teacher/counselor?

What are your favorite subjects?

What are your educational/vocational plans?

Are you working? At what?

Were you working? Did you retire because of your vision?

When did you last work, and at what?

What do you do with your time?

Hobbies?

Reading?

Talking Books? Braille? Large print library?

Is there some activity you once enjoyed that your vision loss now prohibits?

Clinical questions to be answered are listed. These

are questions phrased for the patient. However, many may be more accurately answered by parents, spouse, or other professionals. It is often very informative to compare a teacher's answers to a student's.

How old is your Rx? Does it still help?

Do you have any other optical aids and, if so, where and when did you get them?

Can you read print?

With or without Rx?

What size print?

What gives you the most trouble with reading?

How long has it been since you read print?

Do you watch TV? Color or B&W? From what distance?

Do you see it or listen?

Do you have any trouble with color perception?

Does bright sun or glare bother you?

Do you use special lenses on sunny days?

Do you see better on sunny or rainy days?

Do you use any special lighting at home? If so, what?

How long does it take for your eyes to adjust to changes in lighting?

Do you bump into things more on one side than the other?

Do you have trouble with street signs and bus numbers?

Do you take public transportation?

Do you travel alone? Do you have difficulty crossing streets?

Do you move slower in unfamiliar territory?

Do you have trouble with steps/curbs?

Do you have trouble getting around in your own home?

What causes you the most difficulty with mobility?

Is there some activity you once enjoyed that your vision loss now prohibits?

When the low vision worker and the doctor have reviewed and compared all the data collected and have completed the case history, several problem areas that concern the patient will be identified. One should record these in order of priority.

The case history should provide the two most important pieces of information about the patient:

1. How well the patient is utilizing their residual vision now. Are they functioning as a dependent or independent person for their level of acuity.
2. What specific problems should be concentrated on during the examination and in what priority.

Ocular Health:

This area of testing should indicate any findings that would require further medical attention. The doctor will use an ophthalmoscope to view the retina and other structures of the eye. The more anterior structures, like the cornea and lens of the eye, will be investigated using the bio-

microscope or slit-lamp. This instrument allows the doctor to look at the eye under high magnification to look for any structural changes that would indicate an active pathology or problem needing further attention. Often blood pressure and tonometry measurements will be made at this point of the examination.

Low Vision services are most effective when all routine medical/surgical intervention have been provided prior to the low vision examination.

Acutities:

Unaided distant and near acutities are needed at the initial visit. Illumination must be considered when acutities are taken. The level of illumination in the office should be set at an optimum for the patient. It is mandatory that the doctor RECORD DISTANCES FOR NEAR ACUTITIES ("1M @ 3cm or .03/1M"; "4 point at 10 cm."). Near acutities have several notations. A comparative list of notations is included at the end of this section, so that both examiner and low vision worker can better interpret the data collected. These acutities can also be roughly compared to the noted text size reported from functional evaluations of near vision. Remember, there can be a tremendous difference between number and letter acutities and reading acutities. Know what kind of chart the doctor uses.

APPROXIMATE TABLE OF EQUIVALENT VISUAL ACUITY NOTATION FOR NEAR

Dr. Richard Brilliant

Wm. Feinbloom Vision Rehabilitation Center

<u>Meters Equivalent</u>	<u>Snellen Equivalent</u>	<u>Jaeger</u>	<u>A.M.A. Notation</u>	<u>Point</u>	<u>Approx. Height in m.m.</u>	<u>Visual Angle (in Min.)</u>	<u>Usual Type Text Size</u>
0.4M	20/20		14/14	3	.58mm	5.00	
0.5M	20/25	J1	14/17.5	4	.75mm	6.25	Footnotes
0.8M	20/40	J4	14/28	6	1.15mm	10.00	Paperback Print
1.0M	20/50	J6	14/35	8	1.50mm	12.50	Newspaper Print
1.2M	20/60	J7	14/42	9	1.75mm	15.00	Magazine Print
1.6M	20/80	J9	14/56	12	2.30mm	20.00	Children's Books
2.0M	20/100	J11	14/70	14	3.00mm	25.00	Large Print Material
4.0M	20/200	J17	14/140	28	6.00mm	50.00	Newspaper Sub-Headlines
5.0M	20/250	J18	14/175		7.50mm	62.50	Newspaper Headlines
10.0M	20/500	J19	14/350		15.00mm	125.00	$\frac{1}{2}$ inch letter
20.0M	20/1000	J21			30.00mm	250.00	1 inch letter

All acuity measurements should be checked for unexplained variations from setting to setting, test to test, or clinical vs functional environment. In low vision, acuities are as much a subjective measurement as they are a clinical measurement.

To insure success, the doctor will usually use book or wall cardboard charts so that high contrast letters are presented to the patient. Also the patient will usually be tested at 10 feet or less. This also lets the patient "see" more letters and numbers on the chart, and sets them in a very positive psychological mood for the rest of the examination. This may be the first time a doctor has examined them and they were able to respond to more than waving fingers, flashing lights, or a "Big E" (which they knew was there even if they couldn't see it!). If the patient can see fingers at any distance, they can respond to a chart acuity. It's always much better psychologically to let the patient see targets rather than fingers. A patient should rarely (i.e., never) be given an acuity measurement of "finger count at ft.".

Fields:

Tangent screen, perimetry, Amsler-grid, and functional field-loss observations should be obtained. These can be

done both in the patient's environment and in the clinic, but it is necessary that some form of clinical field testing be performed so that base line reliable data is available on each patient. The purpose of performing field tests is to determine if there is a major loss of vision in some sector of the patient's visual field. It is then up to the doctor to describe how the loss will affect the treatment options being (or to be) considered, or how the loss relates to the patient's reported or observed functional problems.

Tangent screen testing measures the integrity of the central 25° - 35° of the visual field.

Perimetry is used when an extensive evaluation is needed of the 90° - 100° periphery. For instance, in Retinitis Pigmentosa, the central field may be intact, with a large ring scotoma surrounding the central area. This ring scotoma may extend from 15° to 65° and then, there might be a ring of vision way out in the periphery at 65° - 90° . This island or ring of vision would be missed on a tangent screen, because the tangent screen only tests up to a maximum of 35° (usually 30°). As a result, an important piece of information regarding this patient would not be available to the team.

Amsler Grid is a nearpoint test of the central 10° of vision. It is in book form, and consists of a white grid

of small boxes on a black background. It is used to determine the location and extent of central scotomas. It helps the clinician develop a program of eccentric viewing training for the instructor involved with the patient.

The purpose of all field testing is functional. If the best area of vision is known, then it is easier to teach the patient to develop consistent and reliable visual input about the environment around them. The better a patient uses their vision without aids, the easier it will be to successfully prescribe an optical aid. The sequence in which these tests are done varies from doctor to doctor. This information should be collected prior to any decision on aids/services.

Color Vision:

It's important that reports indicate the patient's ability to label colors correctly. D-15 is a preferred test but; at least a gross color discrimination test should be noted. To be aware of the lack of color discrimination is of vital importance to the professionals involved in the rehabilitation aspects of this patient's evaluation and instructional program.

Refraction:

The refraction is a very important part of the low vision

examination. Because of all the problems with the eye, large refractive errors are frequently overlooked - especially in children. It is time-consuming, and thus is the portion of testing that is often hurried or neglected. If done correctly, substantial improvements in acuity can often occur with conventional lenses. A good refraction helps increase the options in prescribing optical aids later on, because less magnification will be needed.

Contact lenses will often be of great value in improving the acuity for people with distorted corneas (the contact lens and tears will smooth out the irregular surface of the cornea and provide an undistorted retinal image), and with high refractive error (more light and better optics increase the acuity). Contact lenses are particularly important for individuals with high refractive errors and a small field.

To help the examiner in determining the presence of refractive errors, an instrument called the keratometer is often used. The keratometer measures the curvature of the cornea, and gives the examiner insight on the presence of corneal distortions (a potential contact lens fit), and an indication of the presence of a large amount of astigmatism which may have been missed on previous tests.

A retinoscope is used to determine refractive errors.

A light beam is shown into the eye where it reflects off the retina and passes back through the eye towards the examiner. By observing the movement of light, the examiner can determine the presence of myopic, hyperopic, or astigmatic refractive errors. The test does not require any responses from the patient and thus, is a valuable test to use with children or with non-verbal adults.

Hand held lenses and a trial frame are used to do a routine subjective evaluation. Most of our instruments are designed for the patient using macular or central vision. If the patient views peripherally, then it will be difficult for them to give the doctor answers that will truly reflect how they typically use their eyes, unless the hand held system is used.

Some doctors will also do a subjective examination while the patient is wearing a telescope. This helps the examiner refine the final prescription, and sometimes indicates that the correction needed in a telescope is different from that used in conventional Rx. This will be particularly important if a spectacle telescope is under consideration as a possible treatment option.

THE IMPORTANCE OF SPENDING LOTS OF TIME ON THE REFRACTION CANNOT BE OVER EMPHASIZED.

Binocular Vision:

Most low vision patients are monocular, and most of the examination will be spent working with the better eye. It is important to note that quite frequently a patient will think one eye is their best eye (from previous exams, etc.). Upon examination, it is often found that the other eye is the "best". Most of the time, the patient is using the better eye and doesn't know it.

If the acuities are relatively equal and not too severely reduced (i.e., less than 3X magnification needed) there is a possibility that, with the appropriate correction and prism compensation, the patient may enjoy binocular vision.

When a monocular correction is prescribed, it usually requires the person to wear a patch at least for the initial training periods. The monocular Rx and/or the patch will often concern people. They think that the eye not being prescribed for will degenerate. This fallacy must be discussed with the patient before they leave the office or this concern of "impending blindness" will affect the success of the prescription and/or program.

Some people can be bi-ocular in that they can use the eyes alternately. It is not unusual to prescribe a reading lens for one eye, and a writing lens for the other.

Magnification:

The examiner should correlate the patient's acuity and problems to be solved by specific diagnostic optical aids. How each of these aids may help in solving the problems indicated earlier in the history should be considered and evaluated. The examiner should demonstrate to the patient how the needed magnification to solve his/her problems can be provided, such as:

1. A microscope
2. A telemicroscope
3. A magnifier (stand and handheld)
4. A projection magnifier (CCTV)
5. non-optically

The pros and cons of each type of aid should be discussed with the patient. The effects of illumination must be included with each demonstration. It is this part of the examination that is the most "creative" for the low vision team. Close cooperation between the examiner and the rehabilitation staff will allow for more flexibility in prescribing.

The treatment option chosen should reflect the needs of the instructional and rehabilitation professionals as well as the clinical data of the examiner. This type of "interdisciplinary Rx" is assured if a post-exam conference

is held with the appropriate low vision rehabilitation workers before a recommendation is given to the patient. The Rx should be considered tentative even after this conference, until the patient has had an opportunity to use a loaner aid.

TRAINING/LOANERS

The doctor should mention to the rehabilitation professionals the potential problem areas observed in the examination. All instructions to the training staff should be written. (At least at first, until the team has had a chance to work together on several patients.)

Instructions:

The training staff will indicate to the patient either in the clinic or at a future home visit:

1. How the loaned aid will solve problems the patient has reported in the history.
2. Materials to be used for training.
3. Performance times, accuracies, scores, etc., expected by the next visit.
4. Reasons for changing a loaned aid (after discussing it with the clinician).
5. Problem areas to be worked on at home (field of view, working distance, focusing, posture, light-

ing, etc.).

SECOND VISIT

History:

A short history is elicited to determine the individual's success and/or frustrations with the loaned optical aid. Discussion of the individual's progress with the rehabilitation professional is also an important part of this history.

Diagnostic Tests:

Many of the tests mentioned as part of the first visit are completed or performed again for confirmation of the first visit's data. A final determination of the prescription of an appropriate optical aid is made.

Training:

Additional training is provided as needed. At this point a specific training regimen for the patient should be able to be outlined.

THIRD VISIT

This is essentially a dispensing visit, with the provision of additional training with the aid. This training is to assure that the patient is functioning at a level of proficiency consistent with the training program evaluation. Since authorization for aids have been known to take up to six months, this can become significant part of the examination process.

Most patients will require many training/progress visits. The more training that can be provided in the patient's environment, the fewer office visits that will be needed. The doctor and low vision rehabilitation worker should be in regular communication about the progress of each active patient. The examination is not complete until all new problem areas have been identified and resolved, and it is obvious that the patient is functioning at maximum visual efficiency.

Communication is a key factor to the success of any low vision service. Communication can be informal, but the low vision rehabilitation workers are encouraged to participate (i.e., not just observe) in all clinical and decision-making sessions. Written correspondence is necessary for funding purposes and to insure the continuation of training services outside the bounds of the immediate personnel of the low vision service (e.g., the classroom teacher). If this sequence is observed, both the clinician and the rehabilitation professional will be able to provide effective and coordinated services for the individual with low vision.

CASE HISTORY

PATIENT OBJECTIVES:

- 1) Are familiar with optical aids?
- 2) Do you think you can be helped by optical aids?
- 3) Do you use any aids now?
- 4) Are you satisfied with these aids?
- 5) Patient prefers: O.D. O.S.

VISUAL HISTORY

- 1) When did you last have an eye examination?
- 2) Who was your doctor?
- 3) Treatment/surgery
- 4) Recent changes:
- 5) Have you ever had a low vision examination?
- 6) Who was your doctor?
- 7) What have doctors told you caused your loss of vision?
- 8) Onset of loss:

MEDICAL HISTORY

- 1) Last physical:
- 2) Doctor:
- 3) How did he say your health was at that time?
- 4) Your opinion of your health:
- 5) Medications:

FAMILY HISTORY

Visual: Glaucoma, cataract, squint, blindness, other
Medical: Diabetes, hypertension

MOBILITY

- 1) Do you get around alone outdoors, even in strange places?
- 2) Do you use any mobility aids like a cane or a dog?
- 3) Do you have any difficulty in getting around indoors, even in strange places?
- 4) Observations:

DISTANCE VISION

- 1) Able to see: billboards, labels, faces at _____ ft.
- 2) Do you attend movies?
- 3) How close do you sit?
- 4) Do you watch T.V.?
- 5) Size screen _____, black/white or color?
6. Do you have any problem recognizing colors?

ILLUMINATION

- 1) Do you see better, and are your eyes more comfortable, when it is bright and sunny or overcast and cloudy?
- 2) Do you use sunglasses?
- 3) Do you use a visor (hat?)?
- 4) Are you bothered by glare S L N?
- 5) Do you have more trouble with your vision at night than you do during the day?

NEAR VISION

- I. 1) Do you read print?
 2) Can you read:
 a) Newspaper headlines (a) _____
 b) Large Print _____ (a) _____
 c) Textbooks _____ (a) _____
 d) Typed print _____ (a) _____
 e) Magazines _____ (a) _____
 f) Newspaper _____ (a) _____
 g) Telephone book _____ (a) _____
 3) How much reading do you do now?
 4) Which type print do you use most?
 5) What kind of light do you use for reading?
 6) Did you read more prior to your vision loss?
- II. 1) Do you use braile?
 2) Reader?
 3) Talking book or cassettes?

- III. Does patient:
 Sew
 Crocket
 Play cards
 Play musical instrument
 Swim
 Bowl
 Bicycle ride

MOTIVATIONS

- 1) How do you spend your day?
 2) Major activities
 3) If you can improve your vision with optical aids, are there any special tasks you would like us to concentrate on?
 (special problems)

LOW VISION REFERRALS - AN INTERDISCIPLINARY DIALOGUE

by

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LOW VISION REFERRALS - AN INTERDISCIPLINARY DIALOGUE:
AN OVERVIEW

The underlying theme of the National Training Workshop in Low Vision, and of this manual, has been the importance of the interdisciplinary approach to low vision care. For this approach to work, the disciplines serving visually impaired individuals must communicate frequently and effectively. This communication is particularly essential in the initial stage: the referral process.

The question as to what is the "most appropriate" procedure for guiding the low vision client through the referral process has often been debated. While some argue that it should be the rehabilitation counselor who decides and coordinates referrals, others propose that the eye care specialist should be the person who makes referrals to other disciplines. We propose that, depending upon resources and local service delivery systems, referrals should be made by and to whomever will provide the best possible service to the client.

Frequently, referrals seem to revolve around the eye care specialist and/or the low vision clinic, but experience tells us that often functional evaluations from other disciplines are requested or performed prior to the clinic visit. The reality of the situation is that, within an informed interdisciplinary team, any professional may refer to another, depending on the clients' needs. The dialogue for services should be strongly underlined by an ongoing, interdisciplinary theme.

Another question frequently asked is the "most appropriate" order for referrals. In one system, it may be more effective for the rehabilitation teacher to refer to the rehabilitation counselor who, in turn, refers to the eye care specialist. Perhaps the mobility specialist may be the first to notice possible visual potential in a client. On the other hand, an eye-care specialist may be the first person to evaluate the vision problem and refer for rehabilitation services. The order of referrals is not as important as the need for clients to be referred, as efficiently and quickly as possible, to those disciplines which can help them function more effectively.

Perhaps, if one were to outline an "ideal" referral sequence, a basic, medical evaluation of general and ocular health might be followed by functional evaluations from appropriate rehabilitation professionals. A functional, clinical low vision evaluation may then follow, with subsequent reevaluation of functional skills, after training with or without optical aids. Each discipline might then have the necessary functional data from which to more effectively plan the rehabilitation process and, hopefully, facilitate a successful, ongoing, inter-disciplinary dialogue.

In an attempt to stimulate further dialogue on this topic, we have asked professionals, representing different service areas related to low vision, to give their particular view points regarding low vision referrals.

AN INTERDISCIPLINARY APPROACH TO LOW VISION REHABILITATION SERVICES

"Low Vision" is a widely utilized term to describe a variety of services being offered to the visually impaired. It is developing as an area of expertise in many different disciplines providing care within the present blindness system. As a philosophy, it is usually associated with a series of evaluations, training programs and services provided to a visually impaired individual which emphasizes the individual's residual vision rather than the visual loss. The number of professional disciplines involving themselves in this area of vision care has created a confusing array of conflicting terminologies and professional philosophies of care.

Low Vision should involve an interdisciplinary group of professionals working with a visually impaired person towards a goal of making that person realize an enhanced level of visual activity. The philosophy is geared towards making visually impaired persons aware of their remaining visual capabilities and bringing them away from dwelling on their loss or impairment. A Vision Rehabilitation Service is a specific series of diagnostic evaluations and training sequences that are designed to aid the visually impaired to

overcome the handicapping affects of their visual impairment and to function at a more enhanced and/or comfortable life style. Simply stated, Low Vision is a philosophy promoting the use of vision, and a Vision Rehabilitation Service is a commitment on the part of an interdisciplinary group of professionals to help the visually impaired realize this philosophy.

The Low Vision Service is directed at solving problems created by vision impairment. The optometrist measures the impairment or the actual damage to the eye which has resulted in an acuity and/or field loss. This impairment can be mild (20/40); moderate (20/200) or severe (20/800 or less). The numbers attached are clinical acuities. They are arbitrary, and standing alone, they are fairly useless. The relationship between the impairment and the handicapping effect of the acuity loss and/or field loss is the diagnostic finding that must be dealt with-- not the acuity notation or pathology. The goal of the low vision rehabilitation team however, is to determine what the handicap is and then try to reduce the debilitating effects of the handicap for that unique individual. It is important that we delineate the degree of the handicap. For instance, two people with a similar diagnosis (RLF with 20/200 acuity) may have differing handicaps. One person may be unable to drive a car, yet

be active socially, run track, make good grades and enjoy life (a minimal handicap). The other person may have very poor travel skills, do very poorly in school and have little, if any, social life (severe handicap). Thus, the same impairment can result in different handicaps for each individual.

Flexibility in delivering services is the key to excellent vision care programs. It is impossible to find one scheme of patient/client care that will meet the needs of the totally blind man who is functioning relatively independently, while the next individual enters the program with 20/60 acuity (can still legally drive during the day) and is totally incapacitated by the impairment and/or fear of blindness. The difficulty of developing a vision care program for these two situations within one service framework is the reason there's so much confusion in the field. Each professional within the low vision rehabilitation team looks at the individual with a biased professional eye and establishes his own set of priorities for rendering services. These priorities may not be consistent with other members of the team and, even though everyone is making an honest effort at rehabilitating the visually impaired individual, confusion is created and a weakened, sometimes ineffective service is provided. Thus, the first key to a successful

program is intrateam communication with lots of professional flexibility.

A three phase model of care will be described. It outlines an optimum low vision service delivery system for the visually impaired in our communities.

Phase I

The low vision rehabilitation team must determine the level of independence at which the visually impaired individual is functioning. This evaluation is best done in a non-clinical setting. The evaluation activities will be referred to as functional and/or environmental measurements as opposed to clinical measurements. The information gathered will entail a look at such things as the level of the individual's social activities, the individual's psychological adjustment to the impairment, travel skills, perceptual problems, measurements of functional acuties, fields, color vision, glare recovery, photophobia, as well as a look at family dynamics, financial needs, access to medical care and the person's own report of his needs and goals. Obviously, it is impossible and even unnecessary to gather all this data on every person entering the service, but the low vision rehabilitation team must be prepared to provide services in all these areas and to make at least a cursory evaluation of potential problem areas. The extent to which these en-

vironmental measurements are obtained will depend on the needs of the visually impaired individual seeking the service and the resources/facilities of that service. This type of information (environmental measurements) helps the low vision rehabilitation team to determine a true and meaningful list of priorities to work with throughout the clinical low vision service and subsequent educational/rehabilitational training services.

The importance of phase one of the Vision Rehabilitation Service is the provision of a thorough non-clinical description of the person so that the most efficient utilization of clinic time is allocated and the correct approach to problem solving for that individual is pursued. The clinical low vision specialists (optometrist, ophthalmologist, technician, etc.) need the information provided in the functional/environmental assessments to make the most effective use of the data gathered in the clinical evaluation.

Phase II

The clinical evaluation consists of making more structured clinical assessments of acuity, fields, refractive error and magnification needs. Comparison of this data with that collected in the functional/environmental assessment, allows the formulation of an ambitious and meaningful treatment plan. The formulation of this plan must:

1. Be done in conjunction with the functional low vision specialists
2. Be directed to meet the specific problem areas described by other professionals providing training in the field (i.e. don't concentrate on reading skills if the person's main problem, at present, is in orientation and mobility skills).
3. Insure the client understands the treatment program and agrees with the same priority of problem solving that the low vision specialist team has formulated.

Phase III

The third phase of the Vision Rehabilitation Service is the training phase. This is often the most neglected part of the Service. The purpose of this phase is twofold:

1. The patient/client is provided the opportunity to use the aid and develop a proficiency with it. Complementary training programs such as mobility, reading training, etc. can also be offered in conjunction with the low vision training.
2. As problems arise within the training programs, further clinical evaluations can be arranged and the treatment program modified in an effort to keep

frustration to a minimum. In addition, if new problem areas are identified, they can be referred for further clinical evaluations and new treatment programs.

While the Service is described in three phases, it must be stressed that this is a continuous loop service and that parts of all three phases may be provided simultaneously. It is important to note that this three-phase Service as described can be provided through utilization of community resources, private practice settings, within private rehabilitation centers, as a mobile program functioning as an itinerant service, and/or probably within a dozen other types of settings. However, it cannot function in an isolated corner of a hospital or professional school. It mandates an interdisciplinary involvement.

The hardest aspect of keeping the program running smoothly is professional egos. With some experience, many feel they can handle someone else's job. Instead of trying to do other people's jobs, the team members must concentrate on their own area of expertise and use this expertise to make a meaningful contribution to the total service. Remember it's our final product that counts. We want our Service to put people back into the community as visually-impaired and not still visually-handicapped.

THE "IDEAL" LOW VISION SERVICES MODEL

PRE-EXAM	EXAM	POST EXAM TRAINING	SUCCESSFUL VISUAL REHABILITATION
1. FUNCTIONAL EVALUATIONS a) Case History b) Motivation Assessment c) Psychological Set d) Functional V.A.'s: distance, intermediate, near e) Functional Field Loss f) Illumination Problems g) Other Handicapping Conditions h) Family & Peer Reactions i) Mobility Concerns NEEDS ASSESSMENT a) General Environmental b) Vocational Settings c) Educational Settings d) Recreational Settings e) Daily Living Problems OTHER PERTINENT INFORMATION a) Teacher, Parent or Employer Concerns	1. CASE HISTORY (compared to pre-clinic info) 2. IDENTIFIED NEEDS (primary) 3. MOTIVATIONAL & PSYCHOLOGICAL SET OF PATIENT 4. VISUAL ACUITIES distance - near 5. VISUAL FIELDS a) Peripheral b) Central c) Near Central 6. BINOCULARITY TESTS 7. MAGNIFICATION TRIALS 8. ILLUMINATION CONTROL ASSESSMENT 9. PRESCRIPTION OF APPROPRIATE AIDS 10. AID FAMILIARIZATION 11. LISTED CONCERNS a) Referral back to family eye specialist. b) Requested clarification from agency personnel concerned with case. c) Requested other services for patient (e.g. mobility, A.D.L. skills, social services, etc.). d) Report sent and arrangements made for training (number & type)	1. Post Follow-up exam. 2. Prognosis for success with aids or visual usage. 3. New or previously unidentified real problems with prescribed aids. 4. Training success and failures. 5. Patient satisfaction 6. NEW PROBLEMS a) New needs b) New goals c) New lifestyle adjustments.	1. Satisfied patient. 2. Is meeting all needs. 3. Will self-refer if needs change

R. Jose, O.D.

LOW VISION REFERRALS - AN INTERDISCIPLINARY DIALOGUE

Low vision services have been around for many years in this country, but the meaning of these words is constantly evolving. It is hard to figure out whether or not it is comprehensive or a place where magnifiers are dispensed. When an administrator is asked to support a program, he is not sure what he is getting for his money. When professionals come to the administrator of a state agency for the blind or a private agency, they are told of the large number of visually impaired patients. In my readings in preparation for this workshop, I found a range from 1.5 million to 6 million. We are told that we should expect 80,000 new cases annually. Because of these wide variations in the estimates of low vision patients, a uniform data collection protocol should be developed and be used nationwide by all low vision clinics. In this way, we can have meaningful statistics with which to work. This would not be a new idea of cooperation. During the '60s, if my memory serves me correctly, state agencies for the blind cooperated in setting up a "model reporting system" for reporting legally blind clients to state registers. This effort led to a uniform information system that could be used for statistical purposes. A

similar system can be used if low vision clinics take the time to cooperate with each other. This first step is essential if we are to gather meaningful data and are to be successful in gaining public funds for the support of services to the visually impaired.

The cooperating disciplines should set up measurable objectives which would act as landmarks during the training of a client. These objectives, written in a similar way to the "individually written rehabilitation plan," would require the participation of clients. This method would help to ensure understanding by the client as to what is happening to him and to gain acceptance of the aid by the client. It would correct one of the major client objections to low vision services as reported in earlier studies, which stated, "The relatively high failure rate was found to be related to haphazard training and follow-up examination" (Faye, 1975). Client satisfaction will do more to bring in referrals than anything else.

The administrator should not hesitate to use advertising in the newspapers, radio, and T.V. Well-placed human interest stories can do much to publicize the services. This may become the best way to reach an aging population, with its increased incidence of low vision. A public education program should not be foreign to a low vision clinic.

It should include outreach programs to centers of the elderly, public health agencies, churches, schools, hospitals, optometric and ophthalmologic professional groups, and let us not forget institutions and associations of the deaf.

REFERENCE

Eleanor E. Faye, M.D., and Claire M. Hood R.N. "Low Vision Services in an Agency: Structure and Philosophy" in The New Outlook, pp. 241-247, June 1975.

LOW VISION REFERRALS - AN INTERDISCIPLINARY DIALOGUE FROM
A REHABILITATION COUNSELOR'S PERSPECTIVE

Introduction

One of the on-going problems in the provision of low vision services has been a chronic lack of communication between the various disciplines involved in the provision of services. This lack of communication is compounded by differential professional statuses and misconceptions regarding the appropriate role of each discipline.

It is not a simple matter to change years of patterned behavior which separates the rehabilitation counselor from the eye care specialist, rehabilitation teacher, and the mobility and orientation specialist. This patterned behavior is easier to understand when we realize that each of our disciplines has had training which emphasizes its unique professional responsibilities. We are in essence coming from the divergent disciplines of medicine, education and counseling and these disciplines are not traditionally cooperative. But it is precisely the fact that each of us are coming from different but related disciplines that enables us to better and more comprehensively deal with the unique aspects of our clients' emotional, functional and physical needs. This fact assures that our low vision clients will

receive effective and relevant services.

After delineating this bleak, and hopefully exaggerated, state of affairs regarding "inter-disciplinary dialogues", it is time to note that there are always exceptions to the general rule. We have all experienced the gratification of working together toward providing services for a client and earning the satisfaction of a job well done. We have also experienced the unexpected, when we finally communicate with one of our fellow professionals and the comment is, "I am so glad you called because I have been as equally concerned about this problem".

We must build upon these communal efforts if we truly desire to improve the delivery of low vision services for our clients. We must begin to break down the communication barriers that now exist between our disciplines. The first and most important way to start to accomplish this task is to share appropriate information about our mutual clients. This sharing of appropriate information, in a timely fashion, is vital if we wish to accomplish our task, the provision of effective low vision services.

Rehabilitation Counselor

I believe that it is the rehabilitation counselor's responsibility to assist in the sharing of information by acting as a liaison between the various disciplines. It

is only through coordination of efforts that low vision services can improve. At this time no one seems to be performing the role of coordinator of services in a consistent fashion. Very often each discipline is unaware of what the other is doing even if the other is involved at the same time in the provision of services. It is the counselor that has the unique central role in the provision of rehabilitation services. It is to the counselor that the other disciplines submit their reports. It is therefore the counselor's responsibility to share appropriate information provided by the other disciplines that directly affect the provision of services to our clients. It is the counselor's responsibility to make certain that low vision services are not being given in a vacuum. It is the counselor's responsibility to assure that the final result of the provision of low vision services is not the typical "glasses stored in the top drawer syndrome" because they were provided without understanding or knowledge of a client's true needs, motivation, or ability to utilize residual vision. If this occurs, it is obvious that, not only do our professions suffer, but the visually impaired individual is not truly benefiting from our expertise.

The provision of low vision services is never static. Very often clients must move in and out of various service

areas as their needs change. A flexible approach to the provision of services is crucial for its success. Following are suggestions meant to assist in achieving a more effective interdisciplinary approach to the delivery of low vision services.

Eye Care Specialist

Obviously the provision of low vision aids should relate to the client/patient needs. In most instances, the eye care specialist completes a case history prior to provision of services in order to determine client needs. The counselor can assist the eye care specialist by providing a needs assessment to be sent with referral material which should also include any previous eye, medical and low vision information available.

Usually information received by the counselor from the eye care specialist details only the type of aid prescribed and the cost of the aid. Most helpful to the counselor and the other rehabilitation professionals working with the client is functional information which details how the client will be able to utilize the aids. A form can be developed with the cooperation of the eye care specialist to insure the exchange of this necessary information.

In general, most eye care specialists are cooperative and available to answer questions concerning their patients,

but are not aware as to what information is needed by the rehabilitation professional. The counselor should establish valuable communication with the eye care specialist in order to clarify technical difficulties in the provision of aids and to be able to re-refer for services whenever needed.

Rehabilitation Teacher

The rehabilitation teacher's primary responsibility in the provision of low vision services is to assist the client in utilizing his residual vision for near and intermediate use. In order to accomplish this task, a client should receive low vision services and be provided with aids prior to the start of training. The teacher should also be provided with low vision reports from the eye care specialist containing functional information regarding the client's ability to utilize residual vision for near and intermediate tasks with and without aids. If the link between the teacher and the eye care specialist is not established, effective utilization of aids is not possible. It is the counselor's responsibility to assure that this linkage occurs.

Communication between the teacher and the counselor is crucial throughout the training process. Without this communication misconceptions can occur about how the client is actually utilizing his residual vision. The client's ability to utilize his residual vision will have direct

impact upon the mutual development of a rehabilitation goal.

Clients' needs can change during the training process. When this occurs, the counselor should be informed so that a new low vision assessment can be considered.

Orientation and Mobility Specialist

The mobility and orientation specialist's primary responsibility in the provision of low vision services is to assist the client in utilizing his residual vision for distance use. Once again, the client should receive low vision services and be provided with aids (at least, loaner aids) prior to the start of training. Instructors should be provided with low vision reports with functional information regarding the client's ability to utilize residual vision for distance tasks with and without aids. Without this information, effective utilization of distance aids cannot occur. It is the counselor's responsibility to assure that the mobility and orientation specialist is provided with the necessary information in order to effectively accomplish this task.

As in no other rehabilitation area, the visually impaired client's ability to travel independently is most crucial to the successful outcome of the rehabilitation process. This ability has direct bearing on the development of a rehabilitation goal with the client. Orientation

and mobility reports to the counselor should always state clearly how the client utilizes his/her residual vision. The instructor should be available to answer questions from the counselor so that there are no misconceptions regarding the client's functional ability.

When client needs change during training, the counselor should be informed so that a new low vision assessment can be considered.

Conclusion

The purpose of all our efforts is to achieve the mutual goal of assisting a visually impaired individual to utilize residual vision to the best of his/her ability, whenever feasible or desireable. How the client reacts to limited vision and to the professionals providing services is crucial to the success of our mutual goal. Hopefully, we will not become "automatic" or "rote" in the provision of our professional duties and will be constantly aware that, in order to be successful in achieving our goal, we must emphasize a "client-oriented" approach.

With the beginning of this inter-disciplinary dialogue we are on the way to improve the delivery of low vision services to our clients.

LOW VISION REFERRALS - AN INTERDISCIPLINARY APPROACH

The number of referrals to low vision clinics by those in the rehabilitation field is increasing as more professionals become aware of the services the clinics offer, and as those services are expanded by the medical and educational professions. Many clients, however, are receiving incomplete or inadequate services because the rehabilitation personnel, are not sufficiently skilled in identifying and assessing low vision clients' abilities and needs.

Because Orientation & Mobility instructors usually deal with clients over a long period of time and are able to see clients function in a variety of environments, they have a unique opportunity to evaluate the need for low vision referrals.

O & M instructors who work with children may encounter a child who is considered to be totally blind but who appears to be responding to visual stimuli. They may observe the child to be performing differently during the day from at night, or better in bright areas than in dimly illuminated ones. The instructor should gather and document information from informal vision evaluations and from discussions with the child's other teachers and family and then

accompany the child to a clinical low vision evaluation at a facility which has had experience with vision development.

Other children who have been identified as having low vision may be able to complete the early grades in school successfully by bringing books nearer to their eyes to read. In the intermediate grades, the print size of textbooks decreases, more complex visual skills are required, and children are better able to handle more complicated low vision aids. These children should be referred to a low vision clinic for an evaluation of their visual skills, efficiency, and potential for using low vision aids. They may need to return periodically as their needs change and as they begin new educational, recreational, and vocational activities.

Instructors who work in rehabilitation centers often see adult low vision clients with unrealistically low expectations. Some have been told that nothing more can be done to help their eyes but have not been told that something can be done to help their vision. Others have been told that they are blind and they should start "adjusting to life" within that framework. As these clients learn that they can still be capable, functioning adults, many will re-establish goals and raise their self-expectations. They will learn that they are still able to perform most of their former

activities but must learn new methods and new skills to do so. In order to maximize their potential, these clients should be referred for a low vision evaluation with specific goals described.

Instructors may also work with a client whose vision is decreasing. A low vision aid which previously enabled that client to read bus destination signs, supermarket aisle signs or price labels may no longer be strong enough. Such a client should be re-referred to the low vision clinic with the goal of determining whether increased magnification will enable him to complete required tasks.

Instructors who work with the elderly in nursing homes or with the multi-handicapped in schools and institutions (including those for the mentally retarded) should discuss each client's progress with the staff members who deal with that client. They might also conduct in-service training programs so that the staff would be better able to identify other patients whose inabilities are caused by visual handicaps.

Any instructor who is teaching a client how to use low vision aids should work closely with the low vision clinic staff. If a client is not reaching the stated expectations of the clinical staff, and the problem does not appear to be instructional, the instructor should refer the client

back to the clinic for further evaluation. If the client is not able to learn to use the aid in the form in which it has been prescribed, the client should be referred for re-evaluation. For instance, if a client is prescribed a hand-held monocular telescope and is not able to learn to hold it steadily, the clinic staff may suggest that he try a clip-on monocular or a bioptic. A client who does not understand his visual condition (for example, one who thinks that using reading aids will hurt his eyes) should be referred to the clinic for additional explanation after the instructor has attempted, without success, to correct his misunderstanding.

A rehabilitation teacher will have the opportunity to make many of the same observations that O & M instructors make. He, too, is able to see a client working at a variety of different tasks and to evaluate specific low vision needs. He may work, for example, with a client who, after learning that he is still able to cook, becomes motivated to read recipes with near vision aids. He may also work with a client who has been referred for instruction in typing and who could proofread his material with low vision aids.

Rehabilitation counselors are often in a key position to refer clients for different services. Because they

often have a long-term relationship with their clients, they can see how visual changes are affecting the functioning of their clients. If a client is being evaluated for a new type of employment, it will be important to assess the level of visual functioning required for the job. The student may need to be referred to a low vision clinic for aids which would enable him to complete the specific tasks which the new job entails. Another client may have a job which is becoming increasingly difficult for him to perform. His rehabilitation counselor could refer him to a low vision clinic to determine whether there are any aids which would help his accuracy of efficiency in performing his vocational tasks. A client who is socially isolated may find that increased visual functioning may broaden his range of interests and activities. For instance, a client may be able to enjoy such leisure activities as bowling, reading, stamp collecting, with the use of low vision aids.

Supervisors and administrators can facilitate referrals to low vision clinics by allocating financial resources and establishing procedures which make the referral process smoother. They should provide in-service training to their staff to advise them of the low vision resources which are available to their clients. They should examine their agency's philosophy and how it relates to their low vision

clients. They should assist those clients in reaching their goals and actualizing their full potential.

HOW THE REHABILITATION TEACHER CAN BETTER EFFECT LOW
VISION REFERRALS

In terms of the interdisciplinary approach all professional disciplines involved are responsible for providing highly specialized information unique to his/her particular area of expertise. If the goal of the interdisciplinary approach is to combine professional perspectives for the purpose of creating a full and complete portrait of the client for all those concerned, then the rehabilitation teacher has a substantial contribution to make. The rehabilitation teacher is in a key position to understand the visually impaired client as a whole, integrated being.

Perhaps of all the professionals involved in the rehabilitation process of the visually impaired client, the rehabilitation teacher is in the prime position to act as a consultant, resource person, client advocate and coordinator of services on behalf of the client. The reasons being that first, the rehabilitation teacher him/herself has both the specialized education and professional experience to provide him/her with a comprehensive body of knowledge of visual impairment, its various causes and functional implications, and the specific techniques necessary to assist the client to overcome many of the difficulties encountered in daily

living activities. Second, the rehabilitation teacher has the distinct advantage of working directly and closely with the client on both a frequent and consistent basis. Third, the very nature of the subject matter rendered is often diverse, highly personal, and often necessary for the client's survival. Such skills would include the protective techniques of Indoor Mobility, the various safety precautions involved in Meal Preparation, the identification and administration of life sustaining medications in relation to Personal Management, the means of personal expression as acquired through Communications Skills, the pride felt by mastering the tasks of Home Management and the personal enrichment found in the successful completion of Leisure-Time Activities. Through close client contact and the content of such subject matter, the perceptive rehabilitation teacher soon comes to know the many faces of success and failure, pain and pleasure, need and desire, and motivation and discouragement of each individual client. Fourth, the teacher is often provided with the opportunity of observing the client's functional abilities, while instructing such subjects, amidst a variety of settings. Such settings might include an agency, school home, hospital, nursing home, nutrition site, day care facility, dialysis clinic or senior citizen center. Fifth, the rehabilitation teacher's perspective is not derived

solely from such direct interaction with the client alone, but also indirectly from involvement with other supportive individuals, professionals and services. Such support groups might include family, friends, neighbors, physicians, visiting nurses, therapists, caseworkers, residence managers and church or temple acquaintances, only to name a few. In other words, because of the rehabilitation teacher's knowledge of visual impairment, the close and consistent client contact, the nature of the subject matter taught in a variety of settings, and the interaction with others involved, he/she is in a fundamental position as contributor towards the understanding of the total client, integral to the success of any therapeutic program, including those geared towards the low vision person.

There are specific factors which the rehabilitation teacher can contribute regarding the physiological, psychological and general visual makeup of the client to help in the successful planning of the total program.

A primary means by which the rehabilitation teacher can better effect the low vision referral process is to conduct and convey the results of a low vision functional evaluation, as described in the article entitled "Functional Low Vision Evaluation for Rehabilitation Teachers". It is important to stipulate whether or not the client is legally

blind, as well as some basic information pertaining to the nature of the ocular problem, including the cause(s) of the visual impairment. Another relevant factor is the client's age at the onset of the loss, along with the duration of time which he/she has been visually impaired. In addition, the rehabilitation teacher must emphasize any evidence of residual vision, how much, and whether or not the client is inclined to use it. It is essential to note whether he/she uses predominantly central or peripheral vision, and any environmental conditions which influence visual perception. The teacher should note the type, strength and direction of the most suitable lighting. He should list whether any particular contrasting background proved beneficial. Additionally important is the working distance most frequently preferred by the client, as well as the size of the object involved. One should note whether the client has demonstrated the ability to read print, and if so, what was size (include examples). It would be advantageous to both the client and the low vision team to delineate the primary goals of the client and what the specific purposes would be for using any applicable aids. Mention should be made of any previous low vision examinations and by whom.

Besides the client's functional visual profile, there are other influential factors relating to the client's

physiological and intellectual state. Therefore, it is essential to enlighten the low vision team of any additional physical or mental conditions which might prohibit the client's learning or utilization of low vision aids. There may be other sensory losses or perceptual problems/abilities which the teacher may feel would either hinder or help the client's visual therapy. An important example is whether the client has good eye-hand coordination, for this is often considered a prerequisite for certain aspects of low vision aids training. If the rehabilitation teacher observes that the client often suffers from postural fatigue of any sort while performing a task, this would certainly be a factor worth communicating. Relating the client's degree of education or literacy level may prove helpful in the design of his/her particular low vision program plan.

Even a client in excellent physical health, with apparently good functional vision, can still be seriously hampered due to certain psychological influences. Therefore, it is important for the rehabilitation teacher to contribute any information which would depict the potential patient's psychological set. One pertinent factor would be any observations as to whether or not the client has demonstrated the ability to be adaptable in training situations. It is also important to note whether or not the client has demon-

strated the ability to be adaptable in training situations. It is also important to note whether or not the client has demonstrated the perseverance necessary to continue with and eventually complete his/her low vision therapy. Both adaptability and perseverance hinge upon the client's level of motivation, which the teacher must discuss in his summary.

Another aspect which the rehabilitation teacher must consider is exactly how self-conscious the client would be in terms of his/her self image when using a prescribed aid in public. This also raises the question of whether or not the client would be easily influenced by peer or family pressure. The teacher should note whether the client is dependent or independent of the immediate family, for psychological or other reasons. It is also important to note if the family will be cooperative, encouraging and supportive throughout the low vision process. Furthermore, one should convey the client's economic status and, if necessary, whether or not it would be possible to obtain third party support. The teacher should include comments regarding the client's general attitude toward him/herself, the handicapping condition, the immediate family or friends, other professional workers, his/her present vocational capabilities and future goals. This should be complemented by the professional impressions of the rehabilitation teacher him/her-

self as a professional, along with a brief outline of what the rehabilitation teaching plan is for the client.

In conclusion, if all, or most of, the factors, previously mentioned are contributed by the rehabilitation teacher, and then combined with the perspectives of each other professional involved in the interdisciplinary referral process, the low vision specialists can be assured of a vantage point from which to view the patient as a whole, integrated person, thereby enhancing his/her prospects for a successful low vision program.

A REHABILITATION TEACHER'S
FUNCTIONAL LOW VISION EVALUATION

by

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A REHABILITATION TEACHER'S FUNCTIONAL LOW VISION EVALUATIONIntroduction:

A functional low vision evaluation is performed by professionals to ascertain the level of vision available to an individual and to find how that individual uses the remaining vision for life skills. The evaluation is administered in an attempt to address some of the needs of the low vision client; the need to know in lay terms the functional implications of his/her particular disease or anomaly, the need to express attitudes and feelings about his/her visual impairment, and the need to find more efficient visual ways to perform life skills. Care of self and the family, independence, communication, socialization and recreation can all be enhanced by more efficient use of residual vision.

The functional low vision evaluation can also aid the rehabilitation teacher in gaining knowledge about visual impairments, dealing with his/her own feelings and attitudes, and becoming more efficient on the job. A thorough understanding of the level and use of the client's vision can also aid the rehabilitation teacher in making referrals to other agencies and professions, assist in choosing the most efficient method of teaching a particular task, and give

greater insight into a client's behavior.

The functional low vision evaluation is not designed to usurp the eye doctor's evaluation, either medical, optical or low vision. It has evolved to complement these by providing a visual transition from the real world to the clinical setting and back again. With prior knowledge about how to use the remaining vision, the client can be more calm and confident during a low vision examination and able to perform the visual tests with greater understanding, thereby saving the doctor's time and energy in directing and coaxing the patient. The patient is able to practice better "consumerism", getting answers to questions which she/he may have been unable to ask before. In the interdisciplinary model the doctor is no longer asked to make educational or vocational recommendations based on clinical findings alone. Now she/he will have information about the functional use of vision in the client's actual environment, and a knowledgeable rehabilitation teacher with whom to confer.

General Suggestions:

Some prior planning for the functional low vision examination is in order. First, attempts should be made to identify as many members of the low vision rehabilitation team as possible. These people will be professionals who have been or will be working with the client. They may

include optometrist, ophthalmologist, medical doctor, social worker, rehabilitation counselor, teacher, mobility instructor, occupational or physical therapist, audiologist, psychologist, visiting nurse, talking book librarian, etc. Then the rehab. teacher should amass as much information as possible from these people. Written reports are desirable. If not possible, then telephone contacts are adequate. The professionals identified should be willing to answer your questions about their evaluations and reports. Facts should be separate from perceptions and attempts made to be as objective as possible. Perceptions have their place however in enabling the rehab. teacher to understand how other professionals view the client.

Often family members and friends can provide information about the client's condition, onset of loss, use of vision and so on. The family and peer group will be an important source of information as they so often provide support for, or pressure against, the use of vision.

Visual information from other professionals is often sketchy and limited to clinical settings. Care should be taken in attempts to extrapolate this information to other environments. The rehabilitation teacher should be thoroughly familiar with this information but not solely guided by it. Two individuals with 20/20 visual acuity can demonstrate

completely different visual performance levels.

For some clients a referral to other members of the rehabilitation team may be in order before or during the functional low vision evaluation period. Not every client will want a thorough low vision functional evaluation. The client who resists using vision and prefers to remain tactual could resist and possibly resent the efforts of the rehabilitation teacher as well. The social worker can help the client uncover some of the psycho-social barriers to using vision; the medical doctor will aid clients whose general health remains a barrier, and so on. Good communication with these team members is a necessity.

One must ascertain during initial encounters with the client what his/her objectives for the use of vision are. The following questions are helpful:

1. How does your remaining vision help you?
2. What would you like to do or do better with your vision?

Some clients may need more specific questions to stimulate a dialogue. Keeping notes of the answers will assist in planning areas of evaluation and training.

The client's objectives will also aid in determining the level of motivation for using vision. Generally, highly motivated individuals have specific objectives which aid

them in achieving their life goals. A high level of motivation generally indicates a potentially successful rehabilitation patient, although some other considerations are in order. Are the objectives realistic and achievable? What will the time frame for achievement be? Is the use of vision the only means or the most efficient means of achievement?

On the other hand, a client can often be guided to realistic objectives, if vague ones or none are stated. Initially, this situation can be facilitated by continuing discussions and examining the information revealed by the functional low vision evaluation.

A constant dialogue with the client is necessary for the most thorough evaluation. The client's comments and questions, as well as his/her answers to the rehabilitation teacher's questions, will yield the most valuable information. If the client's responses are vague, more information should be sought.

Questions and instructions should be precise and clearly stated. The use of technical terms should be avoided, unless they have been previously explained and understood by the client.

The time frame for the functional low vision evaluation is meant to be fluid. As the rehabilitation teacher adapts his/her curriculum to the needs of the client, so will she/he adapt the functional low vision evaluation. The following sequence and suggestions are not intended to be "the answer". As the low vision functional evaluation is incorporated into the rehabilitation teacher's repertoire, she/he should expand, contract, modify, adapt and improve the suit the client's needs and methods of learning.

The setting for the low vision evaluation will be as varied as the settings in which one finds clients; rehabilitations facilities, nursing homes, day care facilities, hospitals, nutrition sites, senior citizen's facilities or the client's own home. The initial evaluation is more easily facilitated in a familiar environment in which the client feels comfortable, and then moved to less familiar surroundings.

A comprehensive evaluation is based on the interaction of three factors:

1. observations made by a perceptive teacher
2. the client's responses and comments
3. the client's performance of specific tasks

Setting prioritized objectives, deciding on the time

frame for the evaluation, and using the information gleaned require an abundance of common sense and creative problem-solving.

EQUIPMENT LIST FOR THE FUNCTIONAL LOW VISION EVALUATION:

- two pen lights
- flashlight
- portable light source with rheostat
- light meter
- typoscope or cutout
- felt base and cut out shapes (with good contrast)
- various household objects
- a variety of small objects
- reading materials

THE FUNCTIONAL LOW VISION EVALUATION - PART I

(See accompanying Form I, located at end of chapter)

PROCEDURES

An excellent beginning for the functional low vision evaluation is a query as to the client's understanding of the doctor's eye report. An interpretation into lay terminology and an explanation of the implication of the eye disease or anomaly is often in order. This will set the stage for an explanation of the purpose and design of the functional low vision evaluation.

As the rehabilitation teacher assesses each area of the client's use of vision, an excellent opportunity is afforded to educate the client in the meaning of visual terms, the amount of vision she/he has available, and how it is used. Thus, the evaluation is a learning as well as a diagnostic procedure. For example, if the rehabilitation teacher learns that the client ignores or does not see targets in the lower field of view, steps may be taken to safeguard against accidents caused by bumping or tripping over low lying objects.

It is important to note visual postures when assessing the use of vision. How does the client move and hold the eyes, head, or body when performing visually? Is the visual

posture different for varied tasks or consistent for all? Are squinting, fist clinching or other signs of stress evident in the visual posture exhibited? These should be noted on the form provided.

During the evaluation, each of the client's eyes should be checked separately. The eye not being used should be patched. Then, when appropriate, test both eyes together.

Following is a sequence of assessments to ascertain general visual information. These should be performed to obtain information which will aid in more effectively evaluating a client's functional level of vision and in planning appropriate training procedures.

External Appearance of Eyes

1. Seat the client comfortably in an area of good illumination.
2. Observe the eyes and lids carefully. Note any redness, swelling, squinting, obvious eye turns such as in, out, up or down. Note position of lids and any unusual drooping, puffiness, etc.
3. Note the iris color and shape, and whether the pupils are round and symmetrical.
4. Observe the cornea for any unusual shape or opacities.

Note: The client should be referred to the eye doctor if the rehabilitation teacher observes anything unusual not previously diagnosed in the most recent eye report.

Awareness/Direction of Lights

1. Can client indicate whether room lights are on or off?
2. If yes, can client point to the direction of the light source?
3. If no, darken room lights to provide greater contrast, and shine a penlight or flashlight at various distances from the client's face.
4. Note if client can then locate light and it's direction.
5. Note type of light and distance from the eye.
6. Repeat procedure for the other eye.

Central Visual Field

1. Patch one eye. Instruct the client to look at 2 penlights or objects held in front of the other eye.
2. Move one of the penlights up, while instructing the client to continue looking at the stationary penlight.
3. Have the client report when the moving penlight disappears.
4. Note constriction in upper field if any.

5. Repeat this procedure below to the left and to the right of the stationary penlight. Note constrictions.
6. Repeat the entire procedure for the other eye.

Peripheral Visual Field

1. Patch one eye.
2. Seat the client and stand behind him/her. Have the client look directly at a light or small object held at eye level.
3. Slowly move a similar light, or object from behind the client's head and into his/her field of view. Continue the movement until client reports seeing it. Note areas of response.
4. Repeat procedure to the top, bottom and other side of client's head. Maintain a consistent arc (light or object distance should always be the same). Record areas of response.
5. Repeat process for other eye.
6. Note areas of constriction.

Note: It is helpful to move the light or object slowly, and vary the areas of presentation so the client does not anticipate from which direction the light will come. Make sure the client maintains fixation on the eye level target at all time; if not the results of this procedure are invalid.

Functional Reading Acuity

(The client's ability to call words or read continuous text in a specific type, format and grade level)

1. Question the client as to past and present reading ability.
2. Ask the client to demonstrate skills in any material she/he can read.
3. Note any difficulties:
 - a) skipping words, letters, lines
 - b) "guessing" or filling in words
 - c) confusion of similar looking words, letters
 - d) reading correctly but very slowly
 - e) letter or word reversal: "was" for "saw" "d" for "b"
 - f) other

(If client reports being unable to read anything, go to step 6, look for letter or word recognition)
4. Question client as to techniques she/he uses for reading mastery.
5. Vary lighting, recheck skills for improvement, vary illumination controls.
6. Check reading skills with a variety of materials:
 - newspaper headlines and subheadlines
 - large hand-printed words, letters
 - felt pen or magic marker
 - larger print (commercial)
 - type print

newspapers

magazines

7. Instruct client to hold reading material as close as necessary, and to move the eye or head if needed. Test each eye individually then both eyes together.
8. If vocabulary is not recognizable, but letters are, try children's books or type, or write simpler words.
9. Look for:
 - letter recognition
 - word recognition
 - ability to read with understanding
 - ability to read at average pace
 - print size needed
 - length, difficulty of words recognized
10. Vary illumination, look for consistency.

Note: Ability to read unaided in any print size does not preclude ability to read with optical aid. Record visual posture and how material was held.

Functional Near Acuity

(Arm's length or closer)

1. Hold household objects at approximately arm's length from client's eye.
2. Ask client to identify objects held.
3. Present various objects to client in order of decreasing sizes (i.e., pillow, desk clock, scissors, cup, coins, needle, etc.)

4. Provide best contrast (i.e. white cup in front of dark wall, or blue pillow in front of white wall.)
5. Note the smallest size object the client is able to identify without difficulty.
6. Vary illumination and background contrast and note changes in client's responses.
7. If client is unable to identify objects at arm's length, slowly move object closer until recognizable. Note furthest distance at which client can identify objects.

Functional Distance Acuity

1. Hold various household objects approximately 10 feet from client.
2. Repeat steps 2,3,4,5 and 6 from "Functional Near Acuity".
3. If client is unable to identify objects at 10 feet, slowly move them closer (up to 2 ft.) until recognizable.
4. If client is able to identify objects at 10 feet, gradually move the objects further away until client experiences difficulty recognizing them.
5. If client is able to identify objects at all distances indoors, move outdoors and continue to increase distance until client experiences difficulty recognizing objects. Note this distance.
6. Note outdoor illumination and vary client's position in relation to the sun.

Scanning

(the ability to move eye/head in a searching pattern to locate an object)

1. Place objects or symbols (which client can easily see) in rows on a desk top or felt board. Use good contrast and the client's preferred level of illumination.
2. Instruct client to locate and name all objects or symbols.
3. Note the scanning pattern client employs. Was it random or systematic? Were any items missed?

4. Repeat procedure using larger to smaller letters or numbers.
5. Ask client to locate clock or object on a wall, window on a house across the street, etc. Vary objects and distances, and note scanning procedure client uses to locate the targets.

Localization

(The ability to find an object or symbol of interest)

1. Place one object on a felt board, providing good contrast. Use the client's preferred level of illumination. Ask the client to locate and name the object. Note scanning pattern. Are any areas overlooked?
2. Move an object to various areas of the field of view and ask client to locate it. Are there any areas in which objects are more difficult to locate?
3. Present the client with a page of large, well-spaced numbers or letters. Ask him/her to locate the top left number, the bottom right number, the 4th number on the 3rd row, etc.
4. Move outdoors and ask client to locate various sized objects (poles, signs, storefronts, etc.) at different distances (10-200 feet).
5. Note scanning pattern client employs in outdoor environment.

Visual Tracking

(The ability to visually follow a moving target)

1. Shine a penlight or hold a small object 2 feet in front of client.
2. Move the penlight or object horizontally, vertically, obliquely, and circularly. Note whether client follows target with head, eyes or both.
3. Note whether tracking is smooth or jerky.
4. Repeat procedure increasing the object size and the distance from the client.
5. Move outdoors and ask client to track pedestrians, automobiles, etc. Note any difficulties observed as speed and distance of moving targets vary.

THE FUNCTIONAL LOW VISION EVALUATION - PART II

The final portion of the low vision functional evaluation is based on observation of the client's performance of daily activities and dialogue between the client and the rehabilitation teacher. During conversations with and observations of the client, three areas of importance should be focused upon, if eventual changes in visual behavior are to be effected:

1. the cognitive area - or the factual information expressed by the client
2. the psychosocial area - or the attitudes and feelings expressed by the client
3. the psychomotor area - or the actual task performance

The initial observations and conversations should attempt to establish where and how the client is presently functioning in these three areas as they pertain to vision.

Once an activity for evaluation is decided upon, it should be analyzed and broken down into components for more critical attention. Later, each component can be trained individually for successful mastery. For example, a client may express the desire to fill out his own checks. This can be analyzed into the following components:

- a) gathering appropriate materials
- b) obtaining the appropriate illumination

- c) locating the appropriate areas of the check face
- d) making the correct written entries on the check
- e) locating and making entries in the checkbook register or stub

As specific attention is given to each of the components of the task, several considerations emerge. These considerations comprise the main areas of the functional evaluation. The following section describes each of these areas. After completing an evaluation of each of these areas, the rehabilitation teacher should have a greater understanding of how the client uses vision and what materials, aids, etc. will be effective in facilitating a more efficient use of vision in the independent performance of desired living skills.

Before beginning an analysis of the client's use of vision in the performance of daily activities, the following suggestions should be considered:

1. Priorities for areas of functional evaluation should be based on the client's needs and goals.
2. When initially observing the client, record your impressions as just that! Then attempt to verify them by looking for consistency under the same conditions.
3. Following verification of your impressions, check to see what effect altering conditions such as lighting, contrast, target size and distance have on the client's use of vision and ability to complete tasks.

4. If an environmental condition is found not to be conductive or contraindicated to the client's use of vision, care should be taken to make necessary and appropriate changes. Changes should be agreed upon by the client. Remember that some clients may need time to become accustomed to the idea of making major changes, and may need to work through transition slowly.

Analyzing Client's Performance of Desired Objectives

Each client may have a variety of objectives to perform or attain in home, work or recreational settings. The following section explains the six areas which should be included in analyzing components of the clients desired objectives. Discussion of these areas is followed by a form for recording data, as well as the completed forms for two example objectives--sewing on buttons or locating dropped objects.

1. External Aids

External aids are any materials or tools needed to complete the task. These include not only optical and non-optical aids, but various household items, special on adaptive furniture, etc. Examples of possible non-optical aids are felt-tip pens, bold-line paper, large size phone dials or playing cards, special labels, self-threading or large-eye needles, music or needlework stands, large print, etc. Optical aids should also be noted, including

the regular prescription lenses and any specialized low vision aids such as magnifiers, telescopes, etc. Record household items used in the performance of the task. If client needs to use particular furniture such as high-backed chairs with arms for postural support this should also be noted.

2. Illumination

Appropriate illumination and sufficient contrast are crucial to the efficient use of vision. Note the level of lighting preferred or obtainable in the client's home, work or recreational area. This can be measured with a light meter on the same place and at the same distance as the target being viewed. The use of illumination control devices such as absorptive lenses, pinhole or shaded glasses, colored filters, lenses, etc. should be noted. Record the level of contrast for each component of the task. Pouring milk into a glass on a light countertop is an example of poor contrast. Removing light colored dishes from a solid dark tablecloth is an example of good contrast. The client's ability to discern colors should also be noted. Can she/he visually choose the appropriate thread color for sewing, or must the thread be organized in a special manner for accurate identification: Is the client able to identify clothing colors? The level of available lighting will often determine the ability to discern colors. Some clients will

Only see colors as black, white or shades of grey. Even this can be most helpful in visual identification.

3. Use of Vision

The client's use of vision, in conjunction with or independent of other senses, should be recorded. Use of vision should be carefully observed by the rehabilitation teacher, and accompanied by questions to the client concerning how she/he is using vision. Both objective observations and subjective comments will aid in determining the extent to which the client relies on vision and/or other senses. Record components of the task requiring visual perceptual skills, noting the size and distance of the object or symbol identified. If the object/symbol was identified incorrectly, but identified as something with a similar configuration, record this guess and the clues the client used in determining his/her answer. Visual motor skills such as eye-hand and foot coordination should also be noted, if important to the successful completion of the activity. If appropriate, comment on speed, distance and depth perception.

4. Visual Posture

When the client is performing various components of the task, record visual postures that are assumed. Are these postures consistent or varied? Do they cause strain and limit the client's attention or work span?

Is the client comfortable performing various home, work and recreational activities? Also note if and how postures change when client is not using vision.

5. Difficulties/Successes

Record whether or not client was successfully able to complete the activity or task. If not, describe any difficulty that was encountered with any component, and if remedial instruction improved client's success rate.

6. Notes

Comments on the quality of performance should be included. For example, the hem of a dress may have been sewn successfully, but the stitches could be large and noticeable, and the completion time excessively long. Include client's level of motivation to use vision and/or perform tasks independently.

THE FUNCTIONAL LOW VISION EVALUATION - PART I (Sample)

	<u>Background</u> <u>Illumination/Contrast</u>	<u>Description</u> <u>Of Target</u>	<u>Distance</u> <u>From Target</u>	<u>Visual</u> <u>posture</u>	<u>Difficulties/Successes</u>
					<u>General Notes</u>
<u>EXTERNAL</u> <u>APPEARANCE</u> <u>OF EYES</u>					O D - appears normal, blue iris, slight tearing O S - cornea "cloudy", rims of eye red, teary, pupil not easily seen
<u>AWARENESS/</u> <u>DIRECTION</u> <u>OF LIGHT</u>	O D - wall, desk lamps with ceiling light on O S only aware of head light	wall and table lamps with soft bulbs ceiling light	6' -12'	O D-turns head to left O S-straight	O D - no trouble pointing to light sources O S - notices only if cannot tell direction.
<u>CENTRAL</u> <u>FIELD</u>	overhead lights, teacher's dark shirt as background	penlight penlight	O D 1' O S 1'	O D-turns head to left, eye to right O S -straight	O D - restriction in upper and right field of view O S - only notices that there is light on in room NOTE: MUST MOVE LIGHT VERY SLOWLY.
<u>PERIPHERAL</u> <u>FIELD</u>	same as central field	penlights	O D 1'	same	O D - restriction in upper and lower fields, right field-inconsistent results O S - only light recognition
<u>FUNCTIONAL</u> <u>NEAR</u> <u>ACUITY</u>	overhead lights; flex arm lamp with 100 watt lamp over area	keys, coins, spoon, fork, pin cushion	approx. 16"	same	O D - ID's no smaller size objects, guesses. Moves eye around to "scan" object before naming

THE FUNCTIONAL LOW VISION EVALUATION - PART I (Sample) (Continued)

	<u>Background Illumination/Contrast</u>	<u>Description Of Target</u>	<u>Distance From Target</u>	<u>Visual Posture</u>	<u>Difficulties/Success General Notes</u>
<u>FUNCTIONAL DISTANCE ACUITY</u>	approx. 8' from target, overhead lighting, light objects on dark wall or other good contrast	foot stool lamp (off) planter wall picture	6-10 feet	same	O D - takes much longer to recognize when contrast is poor; easy with contextual clues (i.d. picture on wall)
<u>FUNCTIONAL READING ACUITY</u>	flex arm at 8" from material, over right shoulder	newspaper subheadlines, large print book	6-7" approx.	same	O D - recognized letters in large print with some dif- ficulty, but confused similar looking letters. Newspaper headlines: could read words slowly
<u>SCANNING</u>	ceiling light; flex arm lamp	15 white but- tons app. $\frac{1}{2}$ "	12-16"	same	O D - client scanned gross- ly from top to bottom, then top again, not systematic, missed buttons on right, 8 reported there were only 8 of them.
<u>LOCALIZA- TION</u>	ceiling light; flex arm lamp	spoon, fork, knife, watch, small ashtray	14-18"	same	O D - Always able to local- ize 1 object after random searching, misses object to right if 2 objects pre- sented, must scan to see more than a few inches apart.
<u>TRACKING</u>	pen light, dark room	penlight, boy on bicycle,	varied	same	O D - Penlight at 1' no prob- lems; boy on bike at 10'-could not hold target-too fast; pedes- trian-no problems; saw only motion at app. 40 feet.

THE FUNCTIONAL LOW VISION EVALUATION FOR REHABILITATION CLIENTS - PART II

Objective:

<u>Components</u>	<u>Illumination Contrast/Color</u>	<u>Use of Vision</u>	<u>External Aids</u>	<u>Visual Posture</u>	<u>Difficulties/ Successes</u>	<u>Notes</u>
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THE FUNCTIONAL LOW VISION EVALUATION - PART II (Sample)

Objective: Sewing on Button

Components	Illumination Contrast/Color	Use of Vision	External Aids	Visual Posture	Difficulties/ Successes	Notes
Gathering materials.	Daylight through window at 15 feet candles.	Able to see and accurately reach for sewing box 1' by 2' at 2 feet, able to see thread and pin cushion to select at 1' unable to select needle from pins.	Sewing box. Sewing materials.	Turns head to left, client reports using right eye.	Unable to visually distinguish needle from pins. No problems with other materials.	Insufficient contrast and visual ability to distinguish two similarly sized and colored items.
Selecting Thread	Daylight, table lamp giving 75 f.c. at 1' brown background	Unable to distinguish color in any threads, arranged by color & position lamp gets black and white, rest are seen as gray.	Various colored threads, arranged by color & position	Turns head to left. Uncomfortable stoop to get under lamp.	Unable to distinguish thread colors	Needed to rely on color of boxes of colored thread.
Threading needle.	Table lamp, brown background.	Unable to distinguish eye of needle in any needles.	Using self-threading needles.	Turns head to left for attempt.	Visually unable to see eye of needle for threading.	Dislikes self-threading needle - breaks thread.
Positioning Button.	Under table lamp 200 f.c. Good contrast.	Able to distinguish position of dark blue buttons on beige material at 6". Positions button using combination of tactual and visual, though not simultaneous.	Using notched hem gauge AFB.	Turns head to left for viewing. When using hands, closes eyes away from lamp.	Able to position correctly.	Uses tactual sense to help. Needs good contrast to perform successfully.
Stitching on Button.		Completely tactual.		Closes eyes, head up and away from lamp.	Unable to perform visually.	Stitches too big, depends on sticking finger with needle for positioning.
Clipping Thread.		Completely tactual.		Closes eyes, head up and away from lamp.	Unable to perform visually.	No problem.

THE FUNCTIONAL LOW VISION EVALUATION - PART II

(Sample)

Objective: Locating Dropped Object

Components	Illumination Contrast/Color	Use of Vision	External Aids	Visual Posture	Difficulties/ Successes	Notes
Initial familiarization with object.	overhead light 100W at 12" Some window light, room moderately lit	Client felt weight and counted number of keys tactually. Held keys 9"-12"	7 gold keys on a 1" diameter key ring.	Lowered head and raised hand to face. Looked straight ahead.	Had good idea of shape, size and number of keys to be found.	Near perception still combination of touch and vision. Has some central vision.
Perceiving objects contact point.	Same as above	Object felt 3 1/4" away. Client turned ear in direction, then faced direction of object. Attempted to scan but unsuccessful.	Same as above.	Bent head downward in direction of object. ject.	Successfully determined direction of object's fall.	Relied first on hearing then attempted to use vision.
Moving toward object.	Large dark chair well contrasted against white wall and light gray rug.	He took one step forward detected chair 2 1/4" away while scanning, made contact with waving hand and lowered self to floor.	Large dark walnut cushioned to maintain balance while crouching.	Turned head to right as if perceiving chair head on.	No difficulty identifying or contacting chair.	Familiar with chair location. Perceived visually, verified tactually.
Object search method.	Gold keys against light gray rug offering minimal contrast.	Continued to scan while employing concentric circle search method. Perception purely tactual at this point.	7 gold keys	Client on fours - neck extended, head moving side to side.	Properly employed search technique.	Unable to visually discern object. Tactual system employed.
Object found yes/no.	Moved desk lamp 75W near end of table, 4" above object. Light reflection off object created better contrast.	Client able to visually discern object within 2' of its periphery. Groped several times before making contact.	small table/desk lamp, 75W.	Head directed toward object slightly turned to right.	Successfully located dropped keys.	Utilized residual vision to complete task successfully.

THE ORIENTATION AND MOBILITY
FUNCTIONAL LOW VISION ASSESSMENT

by

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THE ORIENTATION AND MOBILITY
FUNCTIONAL LOW VISION ASSESSMENT

INTRODUCTION

Inherent in the Orientation and Mobility (O & M) instructional process, or any other for that matter, is the concept of assessment. Instructional goals cannot be established, and training cannot be offered, without the baseline data provided by the assessment process. Assessment is not only part of the initial meetings with our clients but is ongoing throughout the training sequence. It is a continuous cycle of events where we assess our client's needs and abilities; establish training goals; provide training; reassess the client's needs and training program; review original goals; provide training....

Frequently the word "evaluation" is used interchangeably with "assessment". Evaluation connotes judgement. We can be evaluated as performing well or poorly. Assessment connotes the gathering of information for information's sake. Assessment is a value-free term. For the purposes of this chapter and to allow for the most objective measurement of our clients' abilities, the term assessment will be used. We are not in the business of judging whether or not our clients have "good" vision. We want to learn about their visual ability and assist them to put it to its most effective use.

The focus of this chapter will be a functional assess-

ment. This differs from a clinical assessment where the client is in a static, somewhat artificial environment, and is asked to report what he sees most clearly. A functional assessment implies that the activities are applicable to daily life situations. It begins to answer the questions about how the client performs in practical situations. We are all familiar with the differences that can be manifested between the clinical measurement of our client's vision and his actual performance in daily life activities. The importance of the functional assessment cannot be underestimated.

The nature of the O&M process requires that we assess the individual in his environment. As a result, the O&M assessment requires the dual function of environmental analysis along with analysis of the individual's needs and abilities. The choice of appropriate "training areas" such as residential, small business, and commercial, for O&M instruction requires that we analyze the environment for orientation cues, complexity and safety. Careful analysis of the environment is essential to the planning of a solid O&M assessment and training program.

When gathering information about our client's needs and abilities, we focus on his sensory-motor, and cognitive abilities as well as on his psychosocial attitudes toward independent travel. In other words, the functional O&M assessment is geared towards learning about our client's posture, and gait, and his visual, tactual, kinesthetic, olfactory and auditory efficiency. Does he have the cogni-

tive ability and conceptual knowledge to understand his position in space and the organization of his environment? Does he have the emotional stamina and the support from significant others to learn the skills needed for independent travel?

The functional O&M low vision assessment has all of the characteristics cited above plus others. Two important factors that cannot be ignored when working with the low vision person are:

1. the variability of low vision, and
2. the significant effect of any degree or type of vision on the functioning of all other sensory-motor and affective systems.

The variable nature of low vision is probably the single most influential factor that causes us difficulty when trying to assess the client's visual efficiency and performance in the environment. Whereas the client's ability to use his other sensory systems (e.g., auditory, tactile) remains relatively stable on a day to day or hour by hour basis, his ability to use his vision is affected constantly by a variety of intrinsic and external factors. Some of the intrinsic variables that can affect the trainee's visual efficiency are:

1. type of visual loss (central field, peripheral field, or no field defect)
2. the degree of visual loss
3. The trainee's age

4. onset of his visual loss and length of current visual status
5. stability of vision, including both long-term prognosis and short-term fluctuations
6. presence of additional physical or emotional difficulties or complications
7. medications taken and their side effects
8. overall ability to function efficiently on a day to day basis (e.g., fatigue, alertness, stress, pain)
9. trainee's attention span
10. intelligence and perceptual ability to interpret what is being viewed
11. dark-light adaptation features of vision
12. distance and depth perception abilities
13. visual scanning ability patterns and methods
14. color perception ability
15. psychosocial factors such as self-confidence, motivation to make use of vision and/or optical aids, and attitudes toward current visual status.

Given the low vision client and the numerous, unique, personal variables that can affect his visual efficiency, the situation can be further complicated by a series of external variables within the same environment or from one setting to another. Some of the external variables affecting functional vision are:

1. the degree, type and position of illumination in the area (both indoors and outdoors)
2. the degree of familiarity with the environment and its variables
3. the complexity and degree of visual clutter in the environment
4. size, color, and figure-ground contrast produced by the object(s) viewed
5. distance and position of the object(s) viewed from the client
6. time available to view the object
7. movement of client, object(s) viewed, or both

None of the variables can be isolated as the sole factor influencing visual perception and efficiency. Each variable is inter-related so that all must be considered as potentially acting upon and influencing the other. One goal of the low vision assessment is to discover those variables which are most influential in affecting the client's visual efficiency. Rather than approaching the task as difficult, overwhelming, and just "too much to handle", due to all of the variables involved, approach the task as an explorer. You and your client can enjoy your work together, discovering the different individual and combinations of factors that will permit him to use his vision most effectively to meet his O&M needs.

The influence of vision on the functioning of the sensory-motor and affective systems must be considered when

conducting the low vision assessment. In order to receive maximal visual input the client may, for example, tilt his head consistently to one side. Therefore, when assessing his overall O&M potential, one has to recognize that this postural deviation may not be related to some structural problem in the trainee's neck, but rather is resultant from his visual condition. Another example might be the client who walks with a shuffling gait. A superficial analysis might indicate that the client never learned to walk properly and should be referred for gait training. Further investigation however may reveal that the client uses his feet to verify the presence or absence of objects that he thinks he sees in his path.

PURPOSE OF THE FUNCTIONAL O&M LOW VISION ASSESSMENT

Prior to, and throughout our functional O&M low vision assessment, it is essential that we know why we are doing what we are doing. What do we hope to gain from the knowledge we have gathered? What are our expected outcomes? In order to insure a solid working relationship and to gain maximum benefits from the assessment, our clients must also understand the purpose and the rationale behind our questions and structured assessment activities. We can rest assured that it is the rare client who has not been pre-occupied with thoughts about his visual impairment and has had to answer hundreds of questions about what he can and cannot see. Will

you be just another one of those people who ask questions but won't help him to see or function any better?

When considering the purpose of a functional O&M low vision assessment, it is helpful to bear in mind the purpose of O&M instruction. Simply stated, the purpose of orientation and mobility instruction is to teach our clients to remain oriented to their position in space while moving safely, gracefully, efficiently and independently through it. Our assessment therefore, should be structured to determine if the client's vision can assist him to meet the goals of O&M. In some cases, we assess to determine if his vision can be aided or improved optically or non-optically to meet these goals. Consider the difference between the assessment task where the client is asked to identify the color of the paper on your desk and the task where he is asked to retrace his steps from your office to find the red building entrance door. Although both tasks will begin to assess your client's color perception ability, the latter task is more relevant to the purposes of O&M. If you have adequately explained the purpose of O&M to your client, the rationale behind this task will not be difficult for him to understand.

A functional O&M low vision assessment may be conducted for a variety of reasons. Listed below are three of the most common reasons:

1. as a referral to a professional discipline or service such as a clinical low vision service, recreation therapist, rehabilitation teacher, another

- O&M specialist, or a rehabilitation counselor.
2. as a result of a referral from another discipline or service such as an ophthalmologist, optometrist, or a clinical low vision service, to substantiate clinical findings through functional assessment.
 3. to establish instructional goals and strategies for individualized training such as traditional O&M instruction or specialized distance optical aids training.

The clarity of our purpose in conducting the assessment will be reflected in the results that we receive. In general, the results of the assessment should provide us with information about the client's functioning, given his current physical and emotional status. A carefully designed assessment should provide us with answers to specific questions relevant to the client's needs and the reasons for the assessment. When conducted for referral purposes, the specific questions can be designed cooperatively between the O&M specialist and the other professional(s) involved. In other cases (e.g., when establishing instructional strategies, or for referral for O&M instruction) the O&M specialist can design the assessment to begin to provide answers to such questions as:

- Will training be offered? Is it needed? Is it desired?
- Why will training be offered? What needs or purposes will it meet?

-- What will be the emphasis and content of the training program?

CONTENT OF THE ASSESSMENT

The assessment process cannot be conducted in a vacuum. It is not an isolated process where one can "plug in" the correct form and come up with the needed results. Rather the content of the functional assessment must be put into the context of the individual client and setting in which you are working. Discussion of the context upon which you decide the content of your functional assessment includes the following factors:

1. cliented-stated needs, goals and specific O&M problems
2. overall purpose of the assessment (i.e., for referral or instructional strategy planning)
3. client's medical, social, psychological background and status
4. client's life style
5. intrinsic variables affecting client's vision
6. environmental variables
7. service delivery system (i.e., are there monetary or time restrictions or is the assessment process open-ended?)
8. role of the assessor (i.e., as referrer, or as potential trainer or instructor)

The content of the assessment must be relevant to the purposes of O&M within the context of the situation. With this in mind, it becomes almost impossible to develop a "Standardized Comprehensive Functional O&M Low Vision Assessment Form" that will be applicable to all clients within all contexts. It is possible however, to follow general guidelines and areas of emphasis when organizing the assessment plan for your client. Appended to this chapter is a suggested format attending to the content of the functional assessment. It is intended to provide you with the possible types of information to be secured when conducting a comprehensive O&M functional assessment. While it is extremely important to be thorough in one's approach, the need for relevance and flexibility within the context of each situation cannot be overemphasized.

APPROACH-HOW DOES ONE ASSESS?

Careful reading of the appended "Functional Vision Assessment" format will provide you with relevant information about areas of content in the assessment. Knowledge of the potential intrinsic and external variables affecting functional vision will further enrich your understanding of the task. Knowledge of the context of the client's setting, as well as the purpose of the assessment, is also extremely important. But now that you have all those facts under your belt, let's get to the point. How do you assess your client's ability?

All assessment procedures must be structured. Even the most informal of observations must be systematic and organized. If we do not know what we are looking for, we cannot hope to come up with any meaningful results.

Assessment begins on the day that you learn that you have been assigned to work with a specific client. Whenever possible, attempt to receive some baseline data about the client prior to your initial meeting. In other words, read the case records, talk to other professionals involved with the client, and assess the environment(s) in which you plan to work with emphasis on those types in which the client lives and moves.

Although information received from the case records and other professionals may not be presented as objectively as you might wish, try to weed out the important information from that which appears biased. It is important to learn as much as possible about the client's medical, visual, educational, rehabilitation, and psychosocial history as possible. If there are any medical restrictions on your client's movement, this should be known before you ask him to do any independent traveling.

Having received some baseline data from the records and other professionals, you should be able to make some general assumptions about the amount of time available for the assessment and the types of environments in which you plan to work. If, for example, your client is a 68 year old woman with cardiac involvement, the environment in which you work should

not be one that would put undue stress on her body (i.e., don't ask her to travel on 5 flights of stairs to assess her ability to detect drop-offs!).

Many O&M specialists have found it helpful to design "assessment routes or trips". These can be planned for both indoor and outdoor environments. The O&M specialist may select various settings (e.g., in a building; a residential neighborhood; a business area) within which he has planned the assessment route(s). He carefully designs and analyzes the route to insure its appropriateness for meeting the goals of the assessment.

A well-designed assessment trip includes a number of environmental components and external variables (e.g., lighting changes; varying degrees of visual clutter). The goal in planning the route is to include the largest reasonable amount of environmental components and variables to comprehensively (do not sacrifice relevance!) assess the client in the shortest period of time. This does not mean asking your client to walk 2 - 3 miles up hills, through dark alleys, across wide dangerous intersections, all in 30 minutes flat!! Rather, carefully planned assessment trips may include travel along 5 - 6 blocks which have been selected for their variations in lighting; degree of visual clutter and other unique features. A lot of information can be gathered about the client's overall ability during a trip where he is asked to leave your office, exit the building, travel 5-6 blocks to a coffee shop, buy a cup of coffee and return to the office.

To name just a few - this relatively simple trip allows you to assess the following factors:

1. reaction to various lighting changes (indoors, outdoors)
2. negotiation and recognition of obstacles in path
3. street crossing ability
4. spatial orientation ability
5. ability to maintain straight line of travel while walking indoors and outdoors

It can also be beneficial to re-assess the client along the same route after one or more of the variables has been changed. The route described above could be traveled on a cloudy, rainy day and then again on a bright, glary day. When working indoors, you may ask your client to walk through the hallway to the rehabilitation counselor's office. On one trial, the client walks this trip when the hallway is clear of obstacles. On another trial, many obstacles could be placed in his path. Comparing the client's performance in these situations can be tremendously helpful in assessment for subsequent referral and/or instruction.

Some words of encouragement are in order for the itinerant or community-based instructor who is always on the go and rarely in the same neighborhood with more than one client. Scouting for new assessment routes is often an ongoing task. As soon as you feel you "know an area", it's time to move to the next! It is advisable (and justifiable in terms of cost-

efficiency in the long run) to set aside an hour or two prior to meeting your client at home, to scout the surrounding area for appropriate assessment routes. It may also be important here (so be prepared) to plan an assessment trip in an area that is unfamiliar to the client. Comparing the client's performance in an unfamiliar area to that which is familiar to him can be quite beneficial and informative when planning instructional strategies and programs. There are situations however, (e.g., client is permanent resident in a nursing home) where assessment trips planned in familiar areas only can provide sufficient information.

Remember that planning ahead is a vital aspect of the assessment process. When time is limited (and it usually is), we cannot afford to "wing-it". Know as much about your client and the environment beforehand and the quality of the services you offer will increase threefold!

Your first meetings with the trainee should be comfortable yet structured. Initially it is helpful to begin the assessment process with an interview. The advantages of the interview are that it:

1. allows the trainee to express statements about his own abilities, needs and goals.
2. develops rapport between the two of you.
3. provides solid baseline data from which to begin to assess further through specific tasks and behavioral observations.

When conducting the interview, consider the setting that you are using. If possible, select an area that will be comfortable and yet private. It may be that the barrier established, by sitting behind your desk when interviewing, prevents your client from relaxing, trusting, and providing helpful information (not forgetting that glare from an office window should be considered in seating arrangements).

Depending on the amount of time available for the assessment, the interview can be conducted in one or two meetings or as a portion of the first meeting. A structured yet open interview will provide you with information not gleaned from the records or other professionals as well as validate material learned from these other sources. Listen to what your client is saying and respond appropriately. Are there certain things that he is not saying as well?

Some guidelines for the content of the interview are listed below. You would hope to learn about, or validate the following information:

1. Basic identification data
2. present living situation
3. independent travel experience prior to visual loss and currently
4. prior mobility training
5. client's description as to why he is here to see you.
6. history of visual problems
7. stability of vision both long-range and on daily basis
8. ocular medications used

9. Optical and non-optical aids used
10. Client's description (and possible demonstration) of what he can and cannot do visually.
11. Medical history
12. Non-ocular medications taken
13. Client's description of physical restrictions due to medical or ocular problems
14. Preferred lighting and time of day for travel
15. Preferred areas for travel
 - familiar?
 - unfamiliar?
16. Client's description of specific mobility problems faced (e.g. glare, depth perception, objects or persons in peripheral field)
17. Client's goals
18. Family and significant other's attitude toward client receiving training.
19. If appropriate (depending on purpose of interview):
 - a. client's desire for O&M instruction
 - b. client's O&M goals

Having interviewed and talked with client, it can be helpful to observe his movements and learn about his visual efficiency through structured tasks. The concept of assessment routes described earlier is one concrete example of structured tasks designed to assess functional low vision for O&M. When assigning the route, you may prefer to observe the client's movement as he travels ahead of you. Or in addition, when he reaches a

particular goal, you may choose to ask him a series of structured questions. An illustration of this might be:

Task (Route):

Walk along the block until you reach the corner.

Observing:

1. ability to maintain a straight line of direction on sidewalk.
2. ability to avoid obstacles and pedestrians in path of travel.
3. ability to locate drop-off at curb edge.
4. influence on all external variables (e.g. illumination, clutter, obstacles) on his performance.

When client reaches corner, the goal will be to analyze the intersection. * Structured questions will be designed to assess his ability to:

1. see intersection shape and size
2. Note presence of crosswalk lines
3. detect location of moving and stationary traffic
4. see far corner of intersection
5. determine traffic controls
6. personally assess the influence of the external variables
(e.g. "I can't see the traffic light because the sun is in my eyes").

The client may then ask to cross the street (or tell you when he feels it is safest) on his own. Observation of his movement through this task will provide additional information and validate that you have gleaned

*

See "Functional Vision Assessment" form, Section III in Appendix for further detail.

through questioning.

Remember, observation of the client's performance on one trial of a specific task is not sufficient to provide you with all the information needed. If for example, the client moved awkwardly along the sidewalk, it may be that he was affected by sunlight glare. Ask him to turn around and travel along the same sidewalk when the sun is behind him. Observe his movement. Is it any different from that on the first trial?

You could find it helpful to develop a "bag of tasks" from which you would pull to meet the needs of the client at hand. To date no such list or mixture of tasks has been developed and so you are left on your own. But don't panic! It's really not that difficult if you think of the tasks as being representative of daily life movement activities. Tasks include

- (1) walking to the front door
- (2) finding the kitchen stove
- (3) walking to the store with the red canopy
- (4) finding the house with the yellow mailbox
- (5) walking across the street
- (6) finding the brown car parked in the driveway
- (7) entering the store with the revolving doors
- (8) traveling on the escalator to the 3rd floor
- (9) turning the corner
- (10) walking to Main Street and standing near the street sign.

Make the tasks relevant to the client's needs. Whereas it would be relevant for someone to locate an address number of a building that they plan to visit frequently, it hardly seems relevant (unless the person were an historian) to have him read the cornerstone of the building !

RECORDING YOUR RESULTS

It is essential that the information you receive from the assessment be recorded in a systematic and organized manner. No matter how many prizes you may have won for excellent memory recall, you cannot be expected to remember all of the details you have learned during your assessment. Develop a form and coding system that will assist you in recording. Some O&M specialists prefer to carry a small clipboard with them as they assess the client. This method seems advisable as it allows you to record results immediately. Again waiting until you have a quiet minute to jot down a few notes may be too late. Appended to this chapter is a sample data sheet (task-oriented) that was designed for recording information gathered during functional O&M assessment. You may find that a data sheet of this sort would be helpful to you.

REPORTING RESULTS

The detailed information that you gather from your assessment will need to be summarized or outlined in a referral or assessment report. You can rest assured that if your purpose, content and approach to the assessment was clear, systematic and structured, the preparation of the report will cause you little difficulty. You may choose to add some details to a standard referral or report form, but you surely won't miss answering any of the questions presented to you.

Think of assessment as discovering. You are an explorer looking for the hidden gold. Imagine how much richer your clients will be when you help them find it.

SAMPLE DATA SHEET: ASSESSMENT OF VISUAL FUNCTIONING

Client's Name _____

Date	Task	Task Components	External & Situational Variables	Physical Cognitive & Affective Factors	Prior Exper. W. Specific Task & Environment	Performance Data

APPENDIX-AFUNCTIONAL VISION ASSESSMENT

Consider all of the variables affecting functional vision and follow the following guidelines when assessing and training a low vision client. Many of the criteria stated can be evaluated through planned routes and evaluation "trips" to demonstrate performance in addition to actual discussion in a particular environment.

1. INDOOR FUNCTIONAL VISION ASSESSMENTA. Identification of Room/Hallway Configuration:

1. Does the client perceive the basic layout of the room - its dimensions and major characteristics?
2. Does the client locate and detect
 - a. doorways?
 - b. position of windows?
 - c. corners?

B. Estimation of Hall Widths:

1. Does the client see and adjust to obstacles he/she is likely to find in a hallway such as:
 - a. drinking fountains?
 - b. elevators?
 - c. opened doors?
2. Can he/she position himself/herself correctly as client navigates through the hall?

C. Estimation of Ceiling Heights and Overhead Obstacles:

Does client correct for low ceilings, low hanging light fixtures, etc.?

D. Identification of Light Sources:

1. Can client determine the number of lamps and lighting fixtures in room/hallway? Compare lit with unlit lamps?
2. Can the client identify windows and if they are
 - a. open/closed ?
 - b. covered with window shades/blinds?
3. Can client identify presence of open or closed doors along walls of room/hallway?

E. Identification and Navigation of Furniture:

1. At what distances are pieces of furniture seen?
2. Are these pieces seen as a whole or in segments?
3. Can the client distinguish among pieces i.e., ability to distinguish where one piece ends and another begins?

F. Identification of Low Objects:

To test this ability place an ashtray or wastebasket on the floor. Object used should be:

1. of various heights
2. in different positions in the visual field i.e. in front; 45° to either side, 90° to either side.
3. produce a variety of figure/ground relationships i.e. sharp contrast with surroundings, little or no contrast with surroundings.

G. Identification of Stairs:

1. Can client see both ascending and descending stairs?
2. Can client accurately judge the depth of each step?
3. Can client see the beginning and end of the flight?
4. Does client focus on each step separately or is his/her gaze directed at the end of the flight?
5. Does the client effectively negotiate escalators?

H. Negotiation of Doorways:

1. Does the client distinguish between doorways leading outdoors and into rooms?
2. Can client estimate door widths correctly?
3. Can client distinguish a closet door from an entrance/exit door?
4. Can individual deal with and negotiate:
 - a. swinging doors?
 - b. revolving doors?
 - c. automatic doors?

I. Utilization of Signs:

1. Is client able to read signs If so,
 - a. from what distance?
 - b. in what lighting?
 - c. does contrast of print against background and/or sign itself against surroundings effect visibility?
2. Does client use contextual clues in determining the sign's message?

J. Negotiation of Crowded Areas:

1. Is client able to negotiate around people in a building? Test in both familiar and unfamiliar settings.
2. Can client estimate the paths of travel of each person in relation to himself/herself? Are people moving?
 - a. parallel to client's path?
 - b. perpendicular to client's path?
 - c. toward or away from the client?

II OUTDOOR FUNCTIONAL VISION ASSESSMENTA. Identification of Guidelines:

1. Does the client recognize and follow both inside and outside guidelines?
2. Can the client use both grasslines and building lines to maintain a correct line of direction?

B. Identification of Sidewalk and Street:

1. Does the client differentiate the street from the sidewalk? The street may be darker and more coarse than the sidewalk - does the client make note of and use this contrast?
2. Do broken sidewalk and pavements present any special problems?
3. Do shadows produced by buildings, obstacles etc., on sidewalk present any special problems?
4. Does the client understand this width of the sidewalk and travel on it correctly?

5. Does client identify intersecting sidewalks?
6. Is the client able to see exact point where sidewalk ends (drop-off) and street begins?

C. Recognition of Curb:

1. Can the client actually see the curb? If so, at what distance?
2. Is client only able to see the curb when he/she is standing on it?
3. Does the curb appear and disappear for him/her?
4. Is client able to determine the depth of the drop-off? (near and far corners)
5. Determine if the client is able to see the curb on the opposite side of the street.
6. If able to see "far curb", can client distinguish
 - a. presence/absence of obstacles, poles, etc.?
 - b. presence/absence of people?
7. How far beyond the "far curb" can the client see?

D. Distinguishing Houses and Buildings:

1. Can the client differentiate buildings by size, shape, color?
2. Can person locate driveways and building entrance?
3. Can he/she locate
 - a. the porch?
 - b. presence/absence of steps?
 - c. building numbers, addresses, names?
4. Can the client distinguish the number of floors, windows, etc. on the building?

E. Use of Signs:

1. Is the client able to locate
 - a. street signs?
 - b. traffic signs i.e., one-way; no parking, etc.?
2. Does client need to use an aid to read the letters?

3. Does the client use contextual clues i.e., size, shape, location to anticipate the sign's message?

F. Negotiation of Open Spaces:

1. Is client able to cross open spaces effectively?
2. Does client become disoriented in parking lots, gas stations, etc.?

G. Identification of Stairs and Slopes:

1. Does the client visually detect the first step-up or step-down?
2. How well can the client judge the depth of the initial step?
3. How much must he/she slow down in order to safely negotiate the stairs?
4. Can the client visually anticipate slopes? Does he/she have trouble discerning inclines or declines?

H. Recognition of Vehicles:

1. Does the client differentiate among cars, trucks, buses, etc.?
2. What is the effect of the cars' headlights at night?
3. Can he/she identify the objects' pattern of movement in relation to his/her own position? i.e., parallel, perpendicular, same direction, opposite direction?

III FUNCTIONAL VISION ASSESSMENT - INTERSECTIONS

A. Identification of Intersection:

1. Determine whether the client can see and separate the intersection and the merging of streets.
2. Does client see all the street or only the one that is beside or in front of body?
3. Can client determine an
 - a. off set pattern?
 - b. T-shaped pattern?
 - c. Y-shaped pattern?

4. Can the client see the number of lanes and any islands which may be in the middle of the street?
5. Does the client understand the traffic patterns and the method of traffic control used?
6. Can client visually determine the type of traffic control used:
 - a. no control?
 - b. stop signs?
 - c. traffic light?

Make note of how far down the intersecting street the client can see. This may determine client's ability to cross visually when there is no traffic light.

B. Location of Traffic Lights:

1. Does the client see all or only part of the light structure?
2. Can the client see
 - a. closet - same corner signal?
 - b. opposite - far corner signal?
 - c. diagonal signal?
3. Can client read "WALK" - "DON'T WALK" signs?
Moving counter-clockwise around the intersection, determine if the client can see traffic lights and walk lights from every corner. If he/she is unable, consider possible reasons i.e. position of lighting; distance from light; figure/ground contrast.

C. Identification of Colors:

1. Is the client able to see all colors in the traffic lights?
2. Can he/she see the spots better when they are unlit or lit?

D. Identification of White Crosswalk Lines:

1. Can the client spot the crosswalk lines?
2. Is he/she able to see them all the way across the street?

This lesson should be conducted at intersections with both the presence and absence of crosswalk lines.

E. Identification of Vehicles:

1. Can the client distinguish parked vehicles along near and far sidewalks?
2. Is it easier for client to detect moving or stationary cars?

When a vehicle approaches, ask the client to verbally note the points at which he can first and last see the car. Check both right to left and left to right travel.

3. Can client detect speed of moving vehicles? i.e., determine if vehicles are slowing down; accelerating speed, approaching slowly etc.
4. Can the client estimate the path of travel of the vehicle relative to his/her body? i.e., parallel, perpendicular, angling towards or away from the client?
5. At night, do headlights on vehicles interfere with and effect judgments?

IV FUNCTIONAL VISION ASSESSMENT - PUBLIC TRANSPORTATION

A. Bus Travel:

1. Does the client locate the bus stop easily?
What clues are used to locate stop?
 - a. sign?
 - b. painted yellow line on curb edge?
 - c. idling bus at bus stop?
2. Is the client able to identify the correct bus by:
 - a. certain color?
 - b. destination sign (include with and without a low vision aid, if used)?
3. When client boards bus, does he/she:
 - a. negotiate doors and stairs well?
 - b. place fare correctly?
4. Can client find seat or standing place visually?
5. Can client visually determine where he/she should exit? Evaluate on familiar and unfamiliar bus routes.

B. Subway Travel:

Note that adaptation feature of moving from brightly lit areas (e.g. outdoors) to dimly lit areas (e.g. subway stations) and vice versa may interfere with functioning. Client may be advised to wait a few minutes for eyes to adjust before continuing.

1. Can client locate the subway station?
2. Can client negotiate stairs into station and inside station visually?
3. Is client able to visually locate:
 - a. token booth and appropriate window?
 - b. turnstile and token slot?
 - c. exit doors both revolving and swing doors?
4. On subway platform:
 - a. can client determine width of platform?
 - b. can client locate platform edge?
 - c. can client determine whether the platform is single or double edged?
 - d. does he/she move along middle of platform or "hug" edge?
 - e. is he/she able to read signs on subway platform?
5. Is client able to read destination letters and signs on trains?
6. Is client visually able to locate subway door
 - a. while train is moving?
 - b. before/after doors open?
 - c. both inside and outside of subway car?
7. Does client enter train easily?
8. Once entering train, is client able to locate a seat or pole to stand against?
9. Is client visually able to determine when to exit train at appropriate subway stop?
10. After exiting subway car, is client able to orient himself/herself on platform to determine which way to exit station, locate transfer path etc.?

THE ROLE OF THE REHABILITATION COUNSELOR
IN THE PROVISION OF SERVICES
TO LOW VISION PERSONS

by

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THE ROLE OF THE REHABILITATION COUNSELOR IN THE PROVISION
OF SERVICES TO LOW VISION PERSONS

I. Introduction

Most of the visually impaired individuals in this country are not benefiting fully from the rehabilitation system. One of the major factors contributing to this problem relates to "geographic maldistribution of services ...blindness-related services are not heavily concentrated in some areas as is the target population and are virtually absent in more sparsely settled areas, where, nevertheless, many blind and visually impaired persons reside." (Kirchner and Aiello, p. 241, 1980). Another difficulty relates to the lack of differentiating the needs of the visually impaired individual from the needs of the totally blind individual. As stated by Dr. Natalie Barraga, "Until education and rehabilitation make plans on a differential basis for individual needs and interests we are likely to be very ineffective in assisting people to make effective use of residual vision". (p. 178, 1976).

Statistics show that the vast majority of legally blind individuals (75% to 93% of the legally blind population) have indeed, some remaining vision. This certainly does not take into account the added millions of Americans who are

functionally visually impaired in some area of daily life but are not classified as legally blind.

The rehabilitation system, however, has not been able to effectively meet the needs of this large population. The lag time has been considerable between acknowledgement of the special needs of the low vision individual and a restructuring of the rehabilitation system to meet these needs. What can we, as professional rehabilitation counselors, do about this failure of the system? We have two immediate choices: (1) we can condemn the current system because it is simply not prepared, or able, to meet the specialized needs of low vision clients; or (2) we can utilize available services more effectively and at the same time attempt to develop new services for our clients. It is this second choice which is the main concern of this first national multi-disciplinary conference to improve availability and delivery of services to the low vision individual.

For the purpose of this paper, emphasis will be placed upon securing low vision services for the legally blind population. The current system of federal/state funding has put an unequal burden upon either private funding or individual responsibility for payment of low vision services for the functionally visually impaired who are not classified as legally blind. There is an obvious need for a

re-assessment of the current funding practices. However the special needs of the non-legally blind yet functionally visually impaired persons, and the difficulty in securing services for this population, will have to be dealt with at a future time.

II. Coordination "vs" Counseling

The role of the rehabilitation counselor has been debated for many years and may never be completely resolved. One of the longest-standing controversies is between the counselor/coordinator role and the psychotherapeutic counselor role. In general, the coordinator role is espoused by the federal/state agencies and the psychotherapeutic counselor role is espoused by counselor educators. Perhaps the best statement attempting to resolve this debate is the following:

The delivery system is of utmost importance in reaching and serving disabled citizens. Inherent within any adequate program of service to the disabled is counseling. Counseling is important! The therapeutic emphasis to the exclusion of providing other rehabilitation services that some counselor educators advocate is too far out of contact with the reality of the present state agency delivery system. On the other hand, the state administrators cannot dismiss counseling as unimportant... (Hanson, p. 41, 1971).

Within the rehabilitation system, it is the unique responsibility of the rehabilitation counselor to deal

comprehensively with the needs of the client. As stated by Frederick Whitehouse "...counseling is but the tip of an iceberg of considerable thinking, planning, checking, evaluating, decision-making and careful well-deliberated and skillfully organized action". (p. 25, 1975).

The role of the rehabilitation counselor in the provision of services to low vision persons is not a unique one. What will be effective practice for the low vision client will be effective practice for any client in need of rehabilitation services. However, because of the current unmet needs of the low vision client (which include more clinics, more low vision trained optometrists and ophthalmologists and, of course, more money) coordination of existing services is vital. It is this coordinating role that I believe can best be performed by the client's rehabilitation counselor.

III. Vocational "vs" Independent Living

The basic premise of rehabilitation is the innate right of individuals to maximize to the fullest their physical, mental, social, vocational and economic usefulness. As an integral part of the traditional rehabilitation process, one of the basic goals of rehabilitation counseling is to assist individuals in the development of appropriate

vocational goals. This is, of course, an important aspect of rehabilitation/vocational counseling and should always remain so.

What involvement should the counselor have, however, with the individual who is not interested in, or incapable of employment, but is interested in, and capable of maximizing functional areas to be as independent and socially active as possible?

For the counselor working with legally blind individuals, rehabilitation has traditionally been a more broadly defined term emphasizing independent functioning. It has not been limited strictly to vocational development. One of the basic reasons for this approach has been an obvious need, prior to the development of a vocational goal, to deal with basic functional areas of training such as: mobility, activities of daily living, and communication skills. Another reason is the officially accepted goal of "homemaker" which is defined by the federal government as a vocational goal.

If an individual meets the particular criteria of the "homemaker" goal, he/she is eligible for federal rehabilitation funds. However, even this goal is relatively limited and limiting, when dealing with the multi-handicapped and elderly legally blind. One of the intentions of the

current independent living legislation, woefully inadequately funded, is to assist legally blind individuals who do not meet the strict federal definition of "homemaker".

Over half of the legally blind individuals in this country are 55 years of age or older. It is often stated that blindness is an aging disability. The majority of the legally blind who are over 55 years of age do not require a goal leading to employment. Yet, we, as rehabilitation counselors, tend to cling to the word "vocational". If we continue to overly emphasize this aspect of our professional responsibility, we will discover that we are indeed an elitist profession with increasing diminishment of importance in the rehabilitation of the legally blind.

I have heard the following statement from counselors that a client has "only a goal of independent functioning". Somehow many counselors feel that working with such an individual lessens their professionalism. One suspects that they consider themselves failing in their appropriate role. One of the reasons for this counselor attitude is the aforementioned debate over the generic role of the rehabilitation counselor.

In essence we are being trained to perform a limited role that frequently does not exist in the reality of the job market. Yet there remains a tremendous need for re-

habilitation counselors in areas not yet explored. As Daniel Sinick states, "The attenuated distinction between work and leisure calls for the application of rehabilitation counseling skills with clients in settings not traditionally oriented toward work". (p. 20, 1977).

Vocational planning continues to play an important part in the role of the rehabilitation counselor. Remunerative employment is in fact increasing as an aftermath of the Rehabilitation Act of 1973 and its affirmative action mandates. Certainly, any individual who desires and is capable of employment should be assisted and encouraged to achieve this goal. Vocational planning can also be used in new ways, such as assisting retired individuals to find "second careers" that can lead to paid or volunteer work on a full or part-time basis.

However, in order to accurately define the role of the rehabilitation counselor, we must re-examine the basic premise of rehabilitation. Once we do, we are led to the conclusion that we are mandated to work with our clients as complete individuals. As vital as employment is to the well-being of an individual, the other aspects of his life can be equally as important, and should be dealt with as part of the rehabilitation counseling process.

IV. Counselor/Coordinator of Rehabilitation Services

There is a need for competent coordination of rehabilitation services in order to fully utilize existing resources. This need will continue as the economy slackens and human service monies decrease. The major responsibility in the coordination of these services in many delivery systems rests with the counselor. It is most often the counselor who is able to administer a workable "continuum of services" to best meet the needs of the client (DiMichael, 1971).

Do we dare place more responsibility on the shoulders of the counselor when they are overwhelmed with large case-loads, ever-increasing demands for "accountability", i.e., more paper work? Yes. Without the active involvement of rehabilitation counselors, adequate and coordinated services will never be achieved.

This role of the counselor as overall coordinator of low vision services, as an integral part of the rehabilitation process for a client, has not been clearly defined. Some individuals (Quillman and Goodrich, 1980) have mentioned the need for "counseling" in the provision of low vision services. They seem to consider "counseling" to be a generic term to include the disciplines of psychologist and social worker, and are primarily concerned with the important psychosocial aspects of "counseling". Another, (Tallman, 1975),

emphasizes the need for "counseling" of low vision individuals as part of the provision of low vision aids and warns that "counseling" (which is, according to the author, the sharing of eye information with the client) is an important duty of the optometrist/ophthalmologist to assist the individual in acceptance of low vision aids. Still another views "counseling" simply as an adjunct to the provision of low vision services (Stern, 1980).

Often, in fact, one of the major factors leading to the "glasses stored in the top drawer syndrome" is due to the lack of anyone coordinating the provision of the full range of low vision services, including formal and informal counseling. Each discipline within the rehabilitation process for the visually impaired seems to be doing their job, but apparently very little communication exists between the various disciplines. The counselor's primary role is to affect this very essential dialogue and to achieve cooperation between the disciplines by facilitating the exchange of information each discipline needs in order to give effective services to their clients.

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STRATEGIES FOR IMPLEMENTING
MULTI-DISCIPLINARY FOLLOW-THROUGH AND FOLLOW-UP
SERVICES FOR LOW VISION CLIENTS

by

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STRATEGIES FOR IMPLEMENTING MULTI-DISCIPLINARY FOLLOW-THROUGH AND FOLLOW-UP SERVICES FOR LOW VISION CLIENTS

Introduction

The goal of this workshop is to improve the skills of rehabilitation personnel in the delivery of services to low vision individuals. To achieve this goal, major emphasis is being placed upon providing training to rehabilitation personnel to improve their knowledge about eye conditions and low vision services.

Rehabilitation counselors especially lack this knowledge. At this time, if counselors wish to acquire specific medical data on eye conditions, they must usually acquire it through personal research or informal questioning of professionals in the field. Normally, the only formal instruction on eye conditions is covered during counseling education programs as a small part of a course on the medical aspects of disability. The functional aspects of visual disabilities are not presented at all. Adding to this problem is the dirth of effective in-service training programs dealing with this topic, even within agencies primarily servicing the visually impaired. So it should come as no surprise that the rehabilitation counselor is not adequately prepared to deal with the special needs of the low vision individual.

It is the hope of this workshop that the acquisition of requisite medical/technical information will serve as an impetus toward the improvement of low vision services in this country. With this new knowledge, participants will be able to not only more effectively utilize available low vision resources, but will also be able to assist in the development of new services for the low vision individual.

The primary role that the rehabilitation counselor can perform in the improvement of the delivery of low vision services is through better coordination of existing resources. With better coordination, low vision services can be more effectively integrated within the rehabilitation process.

A client's visual needs can change during rehabilitation. Some of the possible occurrences affecting functional ability, and requiring the coordinating efforts of the counselor are as follows:

1. Changing activities during the client's vocational evaluation and training programs.
2. Changing client needs due to fluctuating eye conditions
3. Development of new short-term or long-term rehabilitation goals
4. Motivational changes toward acceptance of low vision aids on the part of the client
5. New eye surgery
6. Changing technology

7. Changes in the family/significant other's attitude toward client's utilization of low vision aids
8. Changes in the social or avocational activities of the client
9. Changes in the client's personal life such as a move to a new geographic location

To assist in understanding how to integrate low vision services within the rehabilitation process, the following is a delineation of the counselor's role in the provision of these services. It is important to note that the visually impaired individual is unique to the rehabilitation process only in the need for emphasis upon maximum utilization, whenever feasible and desirable, of residual vision.

I. Intake/Referral

A. Determination of Need for Low Vision Services

1. The counselor should always obtain a current eye report prior to referral for low vision services. Keep in mind that a new eye exam may be needed at any time during the rehabilitation program because of changing eye conditions. A re-referral for low vision services may also become necessary with changing eye conditions.
2. All clients with any residual vision, including light perception, should be considered for a low vision exam. Remember that the visual acuity indicated on an eye report does not necessarily reflect the client's functional visual acuity.

B. Assessment of Low Vision Client's Needs

1. A preliminary needs assessment of the visually impaired client should be done. A client's needs are those stated by him/her or indicated by observed behavior. If a low vision exam has already been completed, this does not preclude the responsibility of a counselor to make a needs assessment. This assessment will assist the counselor in determining whether or not a follow-up low vision exam is needed prior to the start of the client's rehabilitation program. A brief, relevant needs assessment form can be developed for counselor use. (See Appendix A for sample).
2. It is possible that a preliminary needs assessment will be done also by the orientation and mobility specialist or rehabilitation teacher. In this case, the assessment will be more comprehensive and focused upon structured activities. Note: Varying information received from a client can only assist in the provision of aids, as this variance will elicit more questions and will reveal more closely the genuine needs of the client. If the information received from the client is similar, it will confirm the client's needs.

C. Preparation of Client for Low Vision Exam

1. The counselor should assist the client in dealing realistically with his/her expectations from the low

vision exam. Practical general information can be given to the client relating to possible improved visual functioning through utilization of various low vision aids. Caution in giving this information must be utilized. In most cases, a client's normal reaction to a low vision exam is to have unrealistic expectations. Every attempt should be made by the counselor to assist the client in dealing with the expected exam in as realistic a fashion as possible.

2. The counselor should describe to the client the actual structure of the low vision exam in general terms. Most comprehensive low vision exams involve the following: 1) case history completion to assess client's stated needs; 2) a series of diagnostic exams; 3) prescription of aids; 4) dispensing of aids^{*} 5) training for proper utilization of aids. In addition, follow-up visits are scheduled as needed.

D. Referral for Low Vision Exam

1. When referring the client for a low vision exam, copies of the needs assessments, current eye and medical information, and any previous low vision information available should be sent to the eye specialist.

* Ideally, a client will be provided with "loaner" or "trial" aids. The client, after training with these aids, is given an opportunity to try them out in his/her own environment and to return to the specialist for either further training with the aids or a possible new prescription.

2. A form can be developed for referral or a referral letter can be sent with necessary information. To simplify report writing, results of the low vision exam can be forwarded to the counselor by the eye care specialist utilizing the bottom of the initial counselor referral form (see Appendix B and C for sample forms). If such a form is developed, it is necessary for its successful utilization to involve the eye care specialist who will be using it. The process of developing the form has the additional benefit of improving the communication between the counselor and the eye care specialist.
3. After aids are prescribed, the counselor should meet with the client prior to the start of training. If difficulties are noted in utilization of aids, the client should be referred back to the eye care specialist for further services.

II. Diagnostic/Evaluation

- A. Whenever possible, a client should receive low vision aids prior to the start of a diagnostic evaluation program. This evaluation includes a variety of assessments depending upon client's individual needs, i.e. mobility, communication skills, activities of daily living and psychological/educational testing.
- B. When making the referral for a diagnostic evaluation, all eye and low vision reports should be included

with the counselor's own assessment of the possible utilization of the aids prescribed.

- C. Once the evaluation begins, it may be necessary for a re-referral for low vision services. This is most likely to occur during a vocational evaluation which requires the client to perform a variety of tasks which may be new to him.

In order to assist the client to function at his highest ability in each evaluation area, it may be necessary on a temporary basis only. It is therefore especially important that the counselor encourage a "team" approach between the eye care specialist and evaluators when these special needs occur.

- D. Once the evaluation is completed, and reports are forwarded to the counselor, it is important that the reports indicate utilization of low vision aids. If utilization of aids is not indicated, the counselor must initiate contact with the evaluators involved in order to acquire this necessary information. In this manner, the counselor acts as a liaison between the various disciplines which is crucial for a viable evaluation.

- E. Depending upon the evaluation results, it may be necessary to either encourage continued use of the aids, or to re-refer the client back to the eye care specialist for additional services.

- F. If additional low vision services are indicated, it may be necessary to also re-refer for additional diagnostic evaluations in areas that would be affected by the prescription of new aids.

III. Development of a Rehabilitation-Goal

- A. All the previous steps in the provision of low vision services within the rehabilitation process are necessary prior to the development of a viable rehabilitation goal.
- B. The obvious goal of the provision of low vision services is the maximum utilization of residual vision. However, a client's personality and his reaction to limited vision strongly affect his/her ability to utilize low vision aids effectively. Other factors also affect utilization of low vision aids such as: 1) difficulty in physically mastering the aids (this is especially true for the elderly and multi-handicapped); 2) utilization of the aids is not feasible in a particular environment; 3) residual vision is so limited and fluctuating that it is not possible for the client to use it effectively. Therefore, prior to the development of a rehabilitation goal, it is important to note that it is not always possible to achieve maximum utilization of residual vision according to clinical prognosis.

- C. Counselor must make certain that the client has a clear understanding as to how utilization of his/her residual vision will affect functional ability prior to the development of a rehabilitation goal. Once this is accomplished, a goal can be mutually developed.
- D. Client should be made aware that his/her rehabilitation goal can be adjusted or changed if and when visual functioning changes.

IV. Rehabilitation Training

- A. When referring initially for training, copies of all previous low vision and eye reports, medical information, diagnostic evaluation reports and any reports of previous training should be forwarded to the training facility or private instructor. In those cases, where the same resource has also done the training evaluations, it may not be necessary to send all the data again. In either case, it is important that the counselor confirm that copies of the necessary reports are available to the instructor who will be providing training.
- B. Once training begins, it may be necessary for a re-referral for low vision services as new training needs occur or new rehabilitation goals are developed.
- C. When reviewing training reports, it is important to have information regarding utilization of low vision aids. If this is not provided, counselors should contact the teachers involved to acquire this information.

If this communication is not done, false assumptions may occur regarding utilization of low vision aids. The importance of on-going effective communication between the counselor and instructor throughout the training process cannot be emphasized enough.

V. Placement

- A. Usually, the counselor assists in the placement process after all appropriate rehabilitation training is completed. This placement can be either employment or the achievement of the goal of independent functioning, i.e. of "homemaker".
- B. When a "homemaker" placement is involved, the counselor ideally evaluates the home environment with the client in order to confirm that the client is functioning as well as possible prior to the closure of the case.
- C. When a job placement is involved, either a placement specialist or the counselor will be working with the client in order to secure appropriate employment. When a placement specialist is involved, it is the primary responsibility of the counselor to assist in preparing the client for the job placement process. In either case, an evaluation of the physical surroundings of the work site is necessary prior to the start of employment. Ideally, this evaluation should be done by a low vision specialist or assistant in cooperation with the client and the counselor or placement specialist. Once an

evaluation of the work site is completed, new aids may need to be prescribed, and new training needs may develop.

- D. Once placement is completed, communication between the client and counselor should continue throughout the initial stage of employment to insure a successful placement.

VI. Follow-up Services

- A. A client may find it necessary to re-enter the rehabilitation process because of a new or unfulfilled physical, emotional or functional need. In those cases where the current goal is to be maintained, follow-up services can be provided.
- B. The counselor may re-refer for additional low vision services, re-training, or provide a re-adjustment of the home or work environment to assure that the client will be able to continue to function at his/her highest level.

Conclusion

Because of our unique "touchstone" role within the rehabilitation process, the rehabilitation counselor has a key responsibility in securing better services for the visually impaired individual. In order to fulfill this responsibility and to succeed in improving the delivery of low vision services we must continue to:

1. Become increasingly sensitive to the needs of the low vision individual
2. Improve communication between the various disciplines involved in the provision of low vision services
3. Encourage more community commitment to the needs of the low vision individual
4. Continue to seek out new information regarding low vision services
5. Educate our fellow rehabilitation professionals to the special needs of the low vision individual.

APPENDIX APRE-LOW VISION EXAMINATION INTERVIEW*

Client's Name: _____ Telephone: _____ Case No. _____
Address: _____ City: _____ State: _____ Zip: _____

Client has had a Low Vision examination before? _____ YES _____ NO

If YES, when was client seen last? _____

Client possesses Low Vision aids? _____ YES _____ NO

If YES, types of aids possessed: _____

Client's description of his/her visual functioning:

Distance:

Intermediate (at approx. arm's length):

Near (reading, counting money, etc.):

Counselor's observations of client's visual functioning:

If client's vision could be improved with aids, what functions would he/she like to regain:

Distance:

Intermediate:

Near:

What are client's expectations from a Low Vision examination and aids?

Counselor's Comments:

Client's stated vocational and avocational goals: _____

Additional comments (Use reverse side).

Rehabilitation Counselor: _____ Date of Interview _____

Telephone: _____

*Developed by Anthony R. Candela

APPENDIX C-PART ILOW VISION EXAMINATION REPORT*

Client's Name: _____ Telephone No: _____
Address: _____ DATES OF EXAMINATION AND FOLLOW-UP
City, State, Zip _____ VISITS: _____

This is to refer the above-named client for a Low Vision examination. Attached please find recent Mandatory Eye Medical Examination and Pre-Low Vision Examination Interview reports. This information is provided to assist you in your functional assessment of the client's Low Vision needs.

We are interested in providing this client with Rehabilitation services that will enable him/her to function optimally in both daily living and vocational tasks. This report will be forwarded to all Rehabilitation specialists working with the client. Please address the functional aspects of your examination findings and the aids that you may provide to this client.

PART A. Please comment on the client's abilities and needs in the following areas:

COLOR PERCEPTION: _____ Essentially normal, _____ Abnormal. Explain.

PREFERRED ILLUMINATION:

LIGHT/DARK ADAPTATION, REACTION TO GLARE:

DEPTH PERCEPTION:

NEED FOR CONTRAST:

CLIENT'S MEDICAL CONDITION AND ITS FUNCTIONAL IMPLICATIONS TO LOW VISION AID USAGE:

CLIENT'S UNDERSTANDING AND EXPECTATIONS OF LOW VISION AIDS:

GENERAL COMMENTS:

APPENDIX C-PART II*

PART II. TYPES OF AIDS SUCCESSFULLY TRIED AND/OR LOANED TO CLIENT:

NAME OF AID	FOCAL DISTANCE		ACUITY OR PRINT SIZE		PURPOSE OF AID	CLIENT ACCEPTANCE OF AID	SPECIAL CONDITIONS FOR USAGE (TOLERANCE LIGHTING, ETC.)
	OD	OS	OD	OS			
UNCORRECTED							

PART C. RECOMMENDED AIDS:

NAME OF AID	COST	INSTRUCTIONS OR SUGGESTIONS FOR USAGE
ADDITIONAL COMMENTS:		

Low Vision Specialist
Address: _____

Telephone _____

Signature of Authorizing Counselor _____

Approval Date _____

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TRAINING FOR VISUAL EFFICIENCY
WITHOUT OPTICAL AIDS

by

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TRAINING FOR VISUAL EFFICIENCY WITHOUT OPTICAL AIDSPART IIntroduction

When a person begins to lose vision and the "rehabilitation process" ensues, too often it involves preparation for impending blindness. Skills are taught which deemphasize vision and highlight the use of other senses in a compensatory role. Very infrequently do we find agencies or commissions for the blind who have, as part of their rehabilitation program, a course or set of techniques designed specifically to teach clients the efficient utilization of their remaining vision.

It is ironic that many begin to deal with the visual loss or expected future losses before even considering present visual assets. It is the present, day-to-day life within which our clients must learn to function, yet it is the "uncertain visual future" upon which much emphasis is placed in the rehabilitation process.

Many well-meaning professionals attempt to prepare their clients for eventual blindness via training with the use of blindfolds, tactual materials, etc. The goal is to decrease their clients' reliance on vision and sharpen "future" reliance on their remaining senses. In view of present statistics concerning the incidence of partially sighted individuals who will eventually become functionally blind, there

is scant supportive logic for this approach. According to Genensky (1979):

There are persons and organizations with the blindness community who believe that, at least among the legally blind, most of those who do have residual vision (i.e., are partially sighted) will eventually become functionally blind; although precise studies are needed to estimate actual transition rates, existing M.R.A. data (Model Reporting Area Data published by the Public Health Service and the National Institutes of Health) overwhelmingly refute the inferred progression to total blindness. Instead, the evidence strongly indicates that there is only a very remote probability that a partially sighted person, selected at random from the entire partially sighted population, will eventually become functionally blind.

One point remains, that the client with remaining vision is "seeing", and it is essential for us, as professionals in the rehabilitation process, not to ignore this sight or indiscriminately role play as if the client were functionally blind. Instead, it is our responsibility to evaluate our client's remaining vision, train them in the efficient use of their vision and, most importantly, equip them with the ability to realistically discriminate when to rely on visual information and when to rely on remaining senses or external aids.

Most experienced and well-trained professionals are aware of the need for this type of approach when working with their low vision clients. However, the honest question we have all been asking is how do we do it? The majority of colleges and universities involved in the professional preparation of individuals working with the visually impaired

have provided inadequate preparation in the area of low vision rehabilitation. Most of us have been and still feel ill-equipped to deal with the myriad of problems confronting our low vision clients.

Recently, through increased awareness and several workshop and convention presentations, we have become more familiarized with optical aids and training techniques to assist our clients in optimizing the use of their vision with these aids. However, one area that is consistently neglected is the systematic training of efficient use of unaided vision (i.e., without optical aids other than refractive corrections). Some clients are unable to benefit from the prescription of optical aids, and even those who use aids often do so only for selected tasks. It follows that, in order to help all our low vision clients make the most effective use of their remaining vision, we need to develop and convey training techniques for optimal use of unaided vision.

Efficacy of Vision Training

The functional benefits resulting from systematic and sustained vision training have been documented in numerous research studies, especially in the areas of perceptual psychology and visual development. Consider the following abstracts as quoted in Apple and May (1971):

Improvement of perceptual skill seemed to be in the area of change of attention; there was a greater noticing of the critical differences with less noticing of irrelevancies (J. J. Gibson, 1966).

Perception is not determined simply by the stimulus patterns; rather it is a dynamic searching for the best interpretation of the available data....It is clear that perception in man is susceptible to modification by learning....(R. L. Gregory, 1966).

Perceptual improvement increases with the amount of information given in correction. After perceptual training, improved visual acuity was retained two years; improved peripheral acuity showed 50 percent retention after various intervals (E. J. Gibson, 1953).

Improvement of peripheral visual acuity through training is proportional to the amount of time taken by the training task (W. B. Lancaster, 1944).

Functional diagnosis of persons with residual vision reveals that the spontaneous behavior does not correspond to the optimal utilization of the residual visual function, so that systematic training of such cases will bring about a considerably better general behavior (J. Otto, 1969).

There is abundant evidence for the general proposition that exercises, repetition, practice, and learning lead to better performance, to the acquisition of skills (in seeing) (S. B. Sells, and R. S. Fixott, 1957).

In addition to these clinical findings, and perhaps more convincing from a functional point of view, is the testimony of low vision persons themselves. Numerous persevering and articulate visually impaired persons have attested to the functional benefits (on a daily and long-range basis) of having "trained themselves" to see and to perform better visually in many areas of their daily life (Genensky, 1979, and Work-

shop on Low Vision Mobility, 1976).

Evidence from various clinical and field resources point to the long-range values of systematically and deliberately assisting low vision persons to use their vision effectively. The questions most frequently heard at this point are: "How do we start?", and "Whom do we choose?". The "how" is something we hope to begin to answer in the latter half of this paper. Let us now try to address the "who is an appropriate candidate?" question. Many professionals have considered this a critical question, feeling that one should "pick and choose" trainees who would be most likely to show dramatic improvement or changes in daily performance resulting from carefully designed training in the use of unaided vision. While we understand the reasons (i.e., finances, time) for adopting this point of view, we propose that "whom to train" is one of the simplest questions to answer. Basically, any person with some degree of vision or visual potential (in other words, barring someone with an enucleation of both eyes) is a viable candidate for at least a clinical and a functional assessment--leading to the possibility of program planning in the basic area of vision training.

While we would reject the notion that only "select" persons should receive basic training in developing visual efficiency, we propose that there are critical factors in determining what, how, and when such a training

program should be developed to be success oriented and relevant. As Barraga stated (1976):

Studies have shown that the important variables which determine the effectiveness in the use of residual vision are these:
 1) Motivation to use vision. 2) Intelligence and thinking ability. 3) Personality, self-concept, and attitudes about self and the world. 4) Age at onset and age at which rehabilitation begins. 5) Type and degree of correction or optical aids possible. 6) Nature of defect or disease. 7) Family structure, needs, desires, and attitudes. 8) Past experiences and occupation.

Since all low vision persons are unique, and have differing internal and external characteristics, each individual vision training program will, by its very nature, vary from another. There can be no "safe" generalizations and no "set" program to follow if effective services are to be offered. Rather, the teacher/trainer has to be thoroughly familiar with the functional implications of all of the variables and be competent in adapting basic training principles to the always new combination of variables and needs.

Goals of Vision Training

The purpose of all training of low vision is simply, to improve visual efficiency. The rationale behind all systematic and deliberate efforts to train for improved visual efficiency was most clearly stated by Barraga (1970) when she outlined the reasons for her educational training program:

1) the development of visual ability is not innate or automatic, 2) visual ability is not determined nor can be estimated by visual acuity measurements alone, 3) visual ability and functioning is not related necessarily to the kind and degree of impairment or loss, 4) visual ability and efficiency may be learned through a sequential program of visual experiences.

Since visual perception is a learned process, it stands to reason that it is possible to assist and guide the learner through training, education and re-education.

A simple functional definition of low vision training is offered here:

It is an individualized, sequential training program geared towards improving the efficiency of visual perceptual functioning in low vision persons.

We would add these qualifications:

1. It is initiated after informed consideration of the functional implications of the medical and ocular examination diagnosis and treatment, the clinical low vision examination and findings, and the result of appropriate functional evaluations.
2. It is carried out with the best possible optical correction for refractive errors, in varying environmental conditions, and in consideration of the fluctuating and variable internal and external characteristics of the particular low vision person.

3. It is planned and implemented, whenever possible and appropriate, within a multidisciplinary framework.

The benefits of structured, deliberate, and individualized training of reduced vision are many, and vary in specificity from person to person. In general however, goals are to increase:

1. the knowledge of one's own functional visual abilities and limitations, and of the effects of internal and external variables upon one's visual performance
2. the ability to develop a discriminating and anticipatory approach to dealing with the environment, and to solve visual environmental adaptation problems.

Perhaps one of the more subtle yet important benefits of increased visual efficiency in the low vision person is the effect it may have on the professionals responsible for guidance and counseling. For too long, low vision individuals have been "guided" in vocational and educational decision-making by professionals who erroneously assumed that it was prudent to emphasize their client's visual losses rather than abilities. Nowhere is this more evident than in vocational planning and development.

Choices in this area have been few and have been guided by a total lack of the functional implications of low vision conditions. As Barraga pointed out in 1976, many low vision persons can function in challenging, useful, and active situations,

...provided consideration is given to the potential for continued and adaptive functioning. Little attention has been given to the role of vision in performing certain vocational skills. Because of the lack of research in this area, many rehabilitation counselors and employers have made erroneous assumptions about the degree of vision necessary for people to function effectively in the performance of certain occupations. For this reason, very few people with residual vision have been placed in positions requiring them to make use of vision.... the real challenge must be that the decision is made on the capacity of the individual to function efficiently and effectively rather than upon any measured acuity or labeled categorization which prohibits the opportunity to be vocationally productive.

Psychosocial Factors

The psychosocial issues related to living with low vision have been discussed at length by Morse elsewhere in this manual. Relevant to vision training however, are a few key factors that need to be explored.

Perhaps the most important influence on the success of a vision training (or any rehabilitation) program is the motivation of the client. While this would seem on the surface to be self-evident, it is a most complex issue when relating to the low vision person. We are not

only dealing with the "basic emotional make-up" of the individual, but with the feelings and reactions of the family and of society in general. The element of stigma attached by the public to an obvious visual impairment has been eloquently documented by Goffman (1963), and the opposite experience of the "normal looking" but variably functioning low vision person has been discussed by Blasch & Apple (1966), and Ault (1976). The confusion and breakdown in honest communication between the low vision person and his significant others was discussed by Glass (1970), and Mehr, Mehr and Ault (1970).

The rehabilitation professional will often confront "mixed messages" relating to the client's motivation for a training program geared towards improving his visual functioning. The scope of this chapter allows us only to respond to the training implications of these factors. Experience tells us that there are several actions the vision trainer can take to alleviate a client's stress and motivate him towards commitment to the training:

1. Empathetic acknowledgement of the client's situation (including the profound effects of the countless potential variables on his daily functioning) often has a strong positive effect in establishing trust and rapport.
2. Open and honest discussion of the cosmetic and aesthetic factors which may be related to

the client's preferred physical posture, vision-related mannerisms, and any optical and/or non optical devices often assists the person to make a realistic decision concerning values related to his or her appearance.

3. Therapeutic and supportive involvement of the family and significant others in the vision training program and in the at-home follow-through process can often help the client and the others to develop more realistic and positive goals.
4. Ascertaining the single most aggravating, dangerous, or fearful vision-related problem--and working towards its solution immediately, if possible--can often be the key to motivating the client to continue with the vision training session.
5. Honesty and thoroughness in the sharing of the trainer's functional evaluation findings and proposed training program strategies, with the client as an involved partner, assists the client in developing realistic expectations for the training.
6. A thorough exploration of practical, concrete, relevant applications of the components of the training program is important in motivating all

clients. This will often require stimulating the low vision person to discuss required, desired and/or fantasized activities as well as previously attained ones.

7. The systematic practical, structured and progressively more difficult nature of the training itself appears to have its own rewards for many clients. (This basic concept was introduced by Welsh when discussing similar psychosocial issues related to orientation and mobility training, 1980).

Approach to training is most often as crucial an element as content of training. The generic training concept of always designing our training efforts towards small successful steps has implicit meaning when dealing with the often ambivalent or confused low vision client. The preparations made prior to training, and the efforts expended in structuring the training are also critical for insuring a positive, success-oriented and motivating approach to training.

Variables Affecting Visual Performance

One of the major concepts that must be fully understood by all who attempt to train the low vision person is the profound influence of the numerous internal and external variables on daily visual performance. It is absolutely essential for the trainer/educator and the low vision person

to fully and deliberately consider all these variables when evaluating and training for improved visual functioning. The variable nature of low vision and of the environment in which the low vision person must function have been fully discussed throughout this manual, but especially in the chapter by Rutberg and chapter IV by Geruschat. Many of the psychosocial factors which influence varying visual performance were illustrated by Morse.

One frequent yet somewhat disturbing manifestation of the client's deliberate control over his or her constantly varying vision is often seen by the vision trainer. That is, that certain low vision persons become so emotionally affected by the "peaks and valleys" of their inconsistent daily visual functioning, that they choose to "flatten", or render it more consistent, by deliberately choosing to operate at the lower level. While this may sometimes enable them to render their performance more predictable, thereby eliminating some of their stress, it is regrettable that they must suffer the loss of potentially higher levels of efficiency. This is always a sensitive and complex situation, and the vision trainer must be alert to all of its implications on the client's lifestyle and relationships with others. Experience has shown that one of the most effective strategies the trainer can use to motivate this type of client is to begin by helping the person to learn how to effectively analyze the environment and the effect of external variables on his vision. It is understood that this can only be successfully accomplished if the

person has a thorough understanding of his or her particular eye condition. In this way, the client can be gradually taught how to analyze each environmental adaptation problem and to make realistic and discriminating judgements as to when and how much to rely on visual information. It is not that the fluctuations or variables will cease, but that they can become less frustrating through an understanding of how to compensate for their effects.

Integration of Vision with Other Senses

Implicit in a multidisciplinary approach to vision training is an integration of the program with all other treatment and rehabilitation modalities. In addition to the need for linkage of the vision training with the mobility training, for example, is the more basic necessity to include all of the senses in the planning for improved functioning. If we agree, for example, that one of the anticipated benefits of vision training is for the client to become a better anticipatory and discriminating traveler, then one cannot isolate the visual sense from the need for efficient use of the auditory, tactual, kinesthetic, and proprioceptive senses.

It is often the case that a low vision person, through preoccupation with his or her visual sense, will not be making optimum use of information from other sense modalities. The trainer may need to purposefully demonstrate to the client the resulting improvement in overall performance of tasks. The integration and accurate interpretation of all

sensory information, along with good spatial awareness and controlled bodily movement will lead to increased speed, safety and ease in dealing with the environment (see Workshop on Low Vision Mobility and Vigoroso, 1970).

Sight and Visual Learning

It is important for individuals working with the visually impaired population not to make the assumption that reduced visual acuities or fields precludes one from being able to discern objects, people, etc., no matter how blurry or incomplete they appear to be. Instead of concentrating on how poorly a person sees, we must concern ourselves with how much information is required and what information is most significant for that person's visual learning.

Many studies advocate the serial conception of visual learning and recognition. Selected research supports three main conclusions regarding visual recognition of objects and pictures (Norton and Stark, 1971):

1. The internal representation or memory of an object is a piece-by-piece process. It is an assemblage of features or memory traces of features.
2. The features of an object are the parts of it (e.g., angles, curves, colors) that yield the most information.
3. The memory traces recording the features are assembled into a complete internal representation. Eye movements or internal shifts of attention connect features in a preferred order, forming a feature ring, and resulting in a scan pattern which is used

to verify features in the visual recognition of objects and pictures.

Visual Development - Congenital and Adventitious

How does this information on visual learning apply to the low vision individual seeking greater visual efficiency? To answer this question, we must consider a major difference in the congenitally and adventitiously visually impaired populations. The adventitiously impaired individual already has a visual memory, or internal visual representations. The congenitally impaired individual, depending on the extent of visual impairment, must be taught to develop this visual memory. This person does not have a visual memory bank to draw from, compare features to, etc. This individual needs to be developmentally trained to discriminate, recognize and identify features, gradually building a visual memory from which these skills become easier to accomplish. According to Baraga (1970):

The visual functioning ability of the child is primarily developmental---the more the child looks, especially at close range, the more he stimulates the pathways to the brain. As the brain is given more and more information, there is an eventual accumulation of a variety of visual images and memories. One of the primary problems of the low vision child is that there is very little which he can pick up just incidentally through his visual sense. He needs to be taught the process of discrimination between the forms, outlines, pictures and symbols which may never have been brought to his attention. This process doesn't just happen when he looks, it is a complex pattern of learning, beginning with the very simplest types of visual forms and progressing gradually to more detailed patterns of visual representations.

Many rehabilitation specialists make the mistake of assuming, and consequently training the vision of their congenitally low vision clients with methods comparable to those used with their adventitiously low vision clients. In many cases, however these adults may be "visual children", and shouldn't be expected to respond the same way as individuals who once had vision. Fortunately, after extensive development and research efforts, we have programs and curriculums available such as Barraga's Program to Develop Efficiency in Visual Functioning.

The visual training techniques covered in this program can be modified for work with older congenitally low vision clients. Each person should be taken through the training sequence to assure a level of visual efficiency from which more complex, visual problem-solving skills can ensue. Hopefully the differences between the visual capabilities and levels of functioning for congenitally and adventitiously impaired individuals will then be minimized such that our proposed suggestions can be successfully used by both groups.

As for the adventitiously low vision individual who already has a visual memory, the goal in training becomes one of formulating and adapting to new techniques of processing visual information. For this person, the assimilation of visual information used to be an incidental, unconscious process. Now the individual must learn a conscious, systematic approach to decoding visual cues, as well as learning how to use nonvisual information to supplement these cues. Unlike

the congenitally low vision client, the adventitiously low vision client may need to be refamiliarized with a variety of sensory cues, and trained to consciously integrate critical sensory information to enhance the use of vision.

Visual Efficiency - the Discriminating Learner

We have emphasized the importance of not assuming that, just because low vision individuals don't see as "clearly" as fully sighted persons, they can't be taught the necessary facts about critical features which enable them to perceive environmental information. Just as equally, we should not assume that, if low vision individuals see and discern environmental information, they will be efficient at interpreting and using this information.

Getman proposes a model of the developmental aspects of visual perception from which further training in the efficient use of vision can follow:

1. a vague awareness of a difference in the visual field
2. a generic object in the visual field (the "like" stage)
3. a specific object in the visual field (the "unlike" stage)
4. object reorganization (combining and ordering like and unlike)
5. search for meaning (what it is, what it is for, etc.)
6. naming stage (identification)
7. elaboration and expansion through visualization (beginning of a concept)

Following a model such as this, we can begin to provide our low vision clients with a systematic, developmental approach to interpreting and integrating the necessary visual information for increasing their problem-solving skills. It is important that we teach them to attend to critical features and to ignore less useful information in the environment. We must help them to be discriminating about their visual processing. For example, three individuals may employ different methods of processing information in their attempt to negotiate a busy intersection. Person #1 may approach the curb, see that the light is green, and continue across the street. Person #2 may watch for the light to turn green, wait to see another pedestrian step out onto the street, look for the walk signal to flash, try to determine his or her distance from the perpendicular and parallel traffic flow before crossing the street. Person #3 may watch for the light to turn green, look for perpendicular traffic to stop, check for possible turning cars and proceed across the street. Person #1 may be crossing in the middle or end of the light cycle, and has not checked for other critical information before crossing (e.g., a perpendicular car may be racing through the intersection). Person #2 is overly concerned with too much visual detail. By the time all this information is processed, the light may be ready to change. Person #3, however, employs the necessary visual scanning pattern for

critical features, thus making efficient use of vision.

PART II - TRAINING TECHNIQUES

The purpose of this section is to provide a variety of training techniques for increasing visual efficiency. The techniques chosen are those we have found most helpful in our teaching experiences, and represent day-to-day living situations and environments which low vision individuals must deal with in the pursuit of independent living. Functional examples are given for each topic area. This can serve as a beginning list upon which many skills and practical examples can be added from your teaching experiences. Remember that a wealth of knowledge also exists with the low vision clients you serve. They can be an invaluable resource for functional vision tips, because they face the challenge of using vision, discriminating necessary information and problem-solving each day of their lives.

Scanning - movement of head and/or eyes from one point to another in search of a particular object, person, etc.

There are several methods of scanning. Some are random and unstructured while others are systematic and selective. Most visually impaired individuals use random methods when scanning the environment, resulting in excessive time consumption and inefficient use of vision. Training should center around a systematic approach to looking at the environment.

Example: An individual traveling by subway is required to make changes in subway stations. This person has sufficient vision to perceive the color coded signs, but is unaware of their locations. When exiting the subway, a slow, systematic scan of 180° , at eye level, should follow before proceeding. If no signs are located, move to next area of the station and scan a full 360° before proceeding. If the person uses a random scanning pattern, he or she might easily bypass the sign. If the person continues to move quickly while scanning, the same result may occur. In either case, if the scanning is unstructured some areas are seen more than once and others are missed entirely.

Example: A person with sufficient vision to read large signs, is trying to locate a particular food product in the grocery store. As opposed to randomly moving up and down the various aisles, this person should scan above eye level in each aisle and locate the desired general food section (e.g., fruits/vegetables). That aisle can then be scanned systematically for color cues (e.g., yellow for bananas, red for apples, etc.) until the appropriate item is located.

Fixation - directing the eye towards and focusing one's gaze on the object of regard. Often times the ability to find and maintain fixation on an object, sign, etc. can be very important to one's orientation.

Example: A bus has stopped, and a person is trying to discern the number(s) on the front of the bus. Unless fixation on the area above the front windshield can be maintained long enough, there may not be enough time to discern the number(s) before the bus moves on again.

Example: Practice systematic scanning and locating objects in the midst of a variety of visual backgrounds. Instruct the client to fixate on a target, hold fixation, look away, find target again. Gradually increase speed and fixation time.

Tracing - involves scanning and locating a desired environmental line, then fixating on the line and following (tracing) its path visually.

Example: An individual is trying to locate the doctor's office. She is told that the office is the fifth door down the hall. Since she only has light projection, she might locate the door by visually tracing the walls and counting the glass windows on the doorways (showing inside

light). As the fifth window is located she reaches her desired location. If the doors have no glass windows, she might inquire how many regular windows, (showing outside light) she passes before reaching the office.

Example: A person with poor visual acuity may trace a grass or hedgeline until he locates a break in the line (i.e., color changes or space is perceived). This may be an indication of a driveway or path to a house.

Tracking - visually follow a moving target with eyes and/or head and eyes, while in a stationary or moving position. This is a more sophisticated skill and should be taught after the previous skills are mastered

Example: Begin training by tracking a slow moving object (e.g., wind-up toys) and slow moving persons. Increase speed and complexity of environment until individual is able to track the movement of cars, busses, and pedestrians in crowded areas.

Example: Many individuals may have difficulty seeing in dimly illuminated restaurants. If they ask their companions to wear white or light colored shirts, they can track their companion's movements and establish a line of direction to avoid bumping into tables and other people in

the restaurant.

Visual Closure - the ability to guess or perceive the total object, picture, etc. when only parts of it can be seen. Visually impaired individuals often perform visual closure too quickly. They need to be trained to systematically scan for necessary critical features which will enable them to perform more accurate visual closure.

Example: A rear view screen can be used to enable the person with poor visual acuity to sit close to the screen. Various slides can be shown out of focus, while the person describes any critical information he perceives. Gradually bring the slides into focus, reinforcing systematic scanning for critical features and confirming cues before guessing what the slide describes.

Example: A person who travels by public transportation is unable to read numbers on letters from a distance. She is also shy and unwilling to solicit assistance. By using a rear view screen, slides of various numbers and route destinations can be viewed indoors. Teach her to use configuration clues. For example, Pulley Street can be distinguished from Hoggner Avenue because Pulley has a letter at

the end of the word, which drops below the line, whereas Hoggner has two letters in the middle of the word which drops below the line. In a route such as Middleton Road, there are no letters with "tails" but six letters which are tall and above the line. Even though one's acuity is not sharp enough to perceive clear detail, gross clues and even blurred images may provide enough "critical" information to perform visual closure and identify a desired sign, person, object, etc.

Eccentric Viewing - use of para-macular area for best resolution of an image or object of regard. This is helpful for individuals with central and multiple scotomas. The preferred area for viewing is the retinal area closest to the macular, or foveal vision. The closer to the fovea, the better the acuity, the sharper the image. Individuals with central scotomas may not see parts of a person or objects when looking directly at them, and must be trained to view eccentrically in order to see them more clearly.

Example: Ask the person to look directly at your face. Then direct that person to look slightly to the

left, right, up, down, etc. until your face is more clearly seen. Reinforce position of eye turn necessary to see clearer detail. Once best viewing angle has been found, remind the person to avoid continued eye movement, as this causes scotoma(s) to obscure the image. Any further scanning required should be done with slow head movements, while maintaining eccentric viewing position. Repeated practice is necessary to ingrain this technique.

Example: A strobe, with a threshold size letter attached to its center, is flashed in front of the individual. The strobe is moved until person reports sharpest viewing angle. Then the strobe is flashed in front of this position, creating an afterimage. The person then practices placing this afterimage on targets at a distance of one meter, in an attempt to reinforce best angle of eccentric fixation and viewing.

The following subsection is divided into common problem areas reported by low vision individuals, accompanied by training techniques and adaptive aids helpful in alleviating these problems:

Illumination - amount, direction and changes in lighting conditions are crucial for optimal visual functioning

Problem #1 difficulty adjusting from sun to shade, outdoor to indoor lighting and vice versa (glare recovery and dark adaptation)

- Adaptations:
- A) use of a cane when adaption time renders one functionally blind
 - B) When moving from outdoors to indoors and vice versa, pausing to tie a shoe, remove something from a purse, etc. is helpful if adaption time is short and person does not wish to feel awkward while waiting.
 - C) Wearing absorptive lenses outdoors, and removing them upon entering a shaded or indoor area, significantly reduces adaption time.

Problem #2 reduced visual acuity due to glare, sun, haze, or improper illumination

- Adaptations:
- A) When traveling outdoors, wearing wide-brimmed hats, visors, absorptive/sunlenses, carrying an umbrella, etc. help to increase functional acuity and protect one's eyes from glare.
 - B) When trying to discern a sign, object, person, etc., positioning oneself so the sun comes from behind the person, enables that person to realize clearer detail. If the sun is shining directly onto a person's face, it may result in reduced visual functioning, ranging anywhere from partial to total loss of detail. If necessary, the person should move across the room or street to facilitate best positioning.
 - C) Portable or overhead light sources can cause glare on reading, craft and hobby materials. Either changing the wattage of light bulb(s), changing the position of the light, or one's position in relationship to the light, may prove effective in reducing glare. Use of tinted lens and colored filtered paper may also be effective with this problem.

Problem #3 difficulty with visual functioning in the evening or dimly lit situations such as restaurants, bars, theatres, etc. (Persons with severely

constricted fields of view frequently complicate of this problem.)

- Adaptations:
- A) Portable light sources such as wide angle lights, camping lights, flashlights, and penlights may be used when appropriate for the situation. For example, wide angle or camping lights can prove most useful when walking in an unlit, rural area or when traveling around one's yard at night. Using a penlight can prove effective for reading a theatre program and menu in a dimly lit area.
 - B) It can be helpful and more efficient to use appropriate sighted guide or cane techniques, when a person is rendered functionally blind or incapable of perceiving obstacles, depths, other people, etc.

Depth Perception - lack of ability of accurately judge distance or depth is a critical problem for many low vision individuals.

Problem #1 difficulty detecting curbs and stairs

- Adaptations:
- A) If person visually follows the shoulder line of another person in front of him, he may be able to detect the presence of stairs or curbs, if that person suddenly appears higher or lower in his visual field.
 - B) A group of stationary pedestrians standing together, may be waiting to cross the street. The low vision person, in response, may begin to slow down and anticipate a curb. Also, the inability to see another person's legs at a distance, may indicate a drop-off.
 - C) A person approaching parked cars beside a curb may determine the depth of a curb by that portion of the car's tires which can't be seen, or are covered by the curb.

Problem #2 difficulty negotiating unexpected drop-offs or uneven terrain

- Adaptations:
- A) If possible, person should avoid shadows on

- the ground as these may be indicative of irregularities or drop-offs.
- B) If a shadow or dark area is present on the ground, one may determine this is not indicative of a curb by checking to the side to detect whether or not the grass or shoulder continues. If the shoreline continues, it is not a curb, as shorelines don't continue into the middle of streets (Shadows are, at best, variable cues, depending on their direction, location and intensity of illumination).
 - C) Visually following the movement of other people, walking in front of the low vision individual, can provide cues of irregularity or uneven terrain. Sharp veering or drastic changes in their line of direction should be attended to, as indication of possible hazards ahead.

Problem #3 difficulty determining distance

- Adaptations:
- A) If two similar objects are located on the same level or base, the one which is farther away will appear higher in the visual field. The higher objects or people appear in the visual field, the farther away they are from the person viewing them.
 - B) If one object, sign or person is partially blocking or obscuring the full view of another, the object, etc. being obscured is farther than that one which is "fully" seen.
 - C) If a person fixates at a distance and moves her head back and forth, nearer objects will appear to move faster and in a direction opposite her head movement, while objects farther away will appear to move slower and in the same direction as her head movement.

Orientation - Orientation problems in both familiar and unfamiliar areas can be time-consuming and frustrating.

Problem #1 difficulty locating a particular object,

building, etc. or in maintaining orientation in a given area.

- Adaptations:
- A) Using landmarks such as "the house with the bright red door", "the tallest building downtown", etc., can aid in finding a person's objective.
 - B) The upper field of view is rarely used to aid orientation, and can be most helpful. For example, if a person is looking for a church, he can raise his head and scan above eye level to locate a steeple.
 - C) Soliciting assistance and directions from others is sometimes embarrassing for a low vision individual. If a person feels this way or has not adjusted to the visual loss, statements such as "excuse me, I'm unfamiliar with this area. Could you please tell me what busses pass at this stop, or how I would get to Green Street, etc.?"

Problem #2 difficulty finding objects, food, clothes, etc.

- Adaptations:
- A) Using brightly contrasting tape or color coding items or utensils, most often used in cooking, can be a helpful time-saver.
 - B) Storing medicine bottles, prescriptive drugs, etc. in a set, determined order, instead of randomly placing them in a medicine chest, is safer and less time-consuming for the low vision individual.
 - C) Organizing one's closet by color or hanging up matching clothes together aids in quicker orientation and independent grooming.

Problem #3 difficulty maintaining orientation on an elevator

- Adaptations:
- A) Standing directly in front of the elevator panel can help a person see the floor numbers more clearly. If a lighted panel is present, a person can wait for all the lights, either above or below the desired floor, to go out.
 - B) Some elevators produce a sound similar to a high-pitched bell as each floor is passed. Counting these sounds enable the person to realize how many floors have been passed.

- C) When elevator stops, the person can again push the button for her desired floor. If it is the correct floor, the elevator doors will open again.

Negotiation of Light

Controlled Intersections - Some low vision individuals have difficulty seeing the color of traffic lights due to distance, various lighting conditions and lack of color vision.

Problem #1 difficulty determining appropriate time to cross the street

- Adaptations:
- A) Listening for the clicking sounds of traffic control boxes signals the change of lights.
 - B) Viewing the traffic light at a right angle to the direction of one's movement can be helpful. When that light turns yellow, the person can anticipate a green light in his direction of travel.
 - C) Glare can hamper one's ability to discriminate the color of the traffic light. Changing one's position in relationship to the traffic light and the direction of the sun can reduce the effects of glare.

For continued suggestions on problem-solving skills regarding visual efficiency without aids, the reader is referred to the following references, with special attention to Genensky 1979, Workshop on Low Vision Mobility 1976, and Mobility for the Partially Sighted by Morse, Lessard et al, 1975.

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FUNCTIONAL ENVIRONMENTAL CUES
FOR THE LOW VISION INDIVIDUAL

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FUNCTIONAL ENVIRONMENTAL CUES FOR THE LOW VISION INDIVIDUAL

There are several environmental cues which low vision individuals can use to facilitate day-to-day functioning. Environmental cues include hue, intensity, outline, depth, size, distance, direction, etc. They may be used as they exist, modified or supplemented with external aids to improve functioning in daily work and play activities.

Using or modifying environmental cues is not a skill that occurs automatically, just because the person is visually impaired. Therefore, it is important that professionals involved in the rehabilitation of the visually impaired be aware of cues, possible modifications and additional aids which can improve their clients' functioning.

The following suggestions are addressed to the low vision individual. They have been collected from my personal experiences as a low vision person, and from suggestions provided by other colleagues in the field of education and rehabilitation of the visually impaired. They represent only a partial list of the many common sense tips which are available, and can act as a springboard for further contributions from rehabilitation professionals and, most importantly, the low vision individuals they serve.

WHEN READING AND WRITING:

1. Place yellow acetate on purple dittos and other printed materials. This tends to heighten contrast. The result

can also be achieved by using yellow sunglasses which eliminate reflections from the surface of the acetate. Some people prefer colors other than yellow. Acetate may be purchased in stationary or book stores, as covers for reports.

2. When reading material which is printed on thin or poor quality paper, slip a piece of black paper under the page being read. This eliminates the "bleed-through" effect of the print on the other side.
3. Increase illumination for added contrast. This may be done by sitting in the sun or by adding lamp light. Rheostats, added to lamps, permit self-selected levels of illumination which may vary throughout the day.
4. Place a dark blotter under the page. It helps to cut down on brightness.
5. Place a black marker above the line being read. This will help to find one's place and cut down on the brightness of the paper. Some people prefer a template which shows only one line of print at a time.
6. When the book or other reading material is light in weight and does not need to be stabilized, hold it. This tends to give a "prehension" of the material.
7. For books and papers which need to be stabilized, a reading stand may be helpful. However, because a low vision person generally reads at a very close working

distance, by the time the person is reading the bottom of the page, the height of the stand is not sufficient. (The person's back gets "scrunched" in order to see the words.) Place books under the stand as the reading line gets low. Use a rubberband or other device to adjust page height, and/or use loose leaf binders as a bookstand. Using a stand with an adjustable ledge, provides optimum control.

8. When called away from reading, or when reading and taking notes, leave a magnet on the last word read. With a paper clip sandwich on contact paper behind the page, the magnet helps to relocate one's place.

9. When reading a map, place one finger on the destination. This helps to direct the eye, or eye and lens, from the origin to the destination.

10. When possible, to relieve neck and back fatigue, or as an alternative position, read lying on a mat, carpet or bed (on your stomach). Eyes are close to the page and this position "reverses" the "bending over one's work" position.

11. Choose lined paper with lines which are not too bold. While dark, bold lines may be helpful in writing, they may, for some people, create problems in "reading back" the written word. Lines on a page need only be as dark as necessary to stay on the line. Choosing a felt tip pen in a color other than the color of the lines may also

be helpful. Thickness of line is also another personal preference.

12. The size of one's writing is another factor in legibility. The need to see what is written, as it is being written, may slow down the individual. Rather, writing in a size which can be "read back" is more important. When later reading a paragraph which has been written, the low vision person can hold the sheet at a comfortable "reading distance". This distance is not always the same as a comfortable "writing distance".
13. For math, or those writings which need to be seen while writing, a lighted pen, or a thicker marker may be helpful.
14. When reading before an audience, colored lines, to divide sections, are helpful in relocating one's place. After looking upward, the reader can recall the section color.
15. When the book is light-weight and when it doesn't need to be stabilized, experiment with preferred movements of the eyes, head and book. Keeping one's head and eyes still, while moving the print, is called a "fluid field". For some low vision individuals this is the most efficient mode for reading. Others prefer to keep their head and print still, while moving their eyes instead. To do this the print needs to be a sufficient size, and/

or they need to be able to see the material at a sufficient distance. This may be easier for reading newspapers with narrow columns. Movement of head alone, with object and eyes remaining still, is another alternative, as is a combination of eye and head movements while the print remains stabilized. (When optical aids are introduced, the power, mounting and other aid characteristics may alter the preferred mode.)

16. Use a yellow highlighter or other colored markers to relocate phone numbers in the telephone directory. Enlarge and/or color code numbers on a rolladex (e.g., a red dot for out of town numbers). File folders can also be color coded (e.g., blue dots for one category, red for another).
17. Choose a desk position in an office, (or a seat in a restaurant) so that light doesn't "hit" the face or silhouette other people. The sun or light source should also not be at one's back, as it may place the reading material in one's own shadow.
18. Books which are placed on top or low shelves may be out of visual reach. Make labels extra large so that you don't need to pull down each and every book to locate the desired one. Also, enlarge such things as the years on a set of journals.
19. If you have a light colored or clear handled magnifier,

place a piece of tape on the handle. This will make it easier to locate.

WHEN TRAVELING:

1. Either choose brightly colored luggage or consider placing a large, bright color on your present luggage. This makes it easier to find pieces at an airport, bus station, etc.
2. Learn to read reflections. When approaching a store counter, salad bar or cafeteria line which has clear plexiglass or another transparent substance, approaching at an angle may give more reflective information.
3. If specialized sunlenses have not been prescribed, choose a pair of sunglasses which will be helpful in the sun as well as in the shade. Acuity is lowered with tinted lenses in the shade and the lenses may need to be removed. Some people prefer sunglasses made of two polarizing materials, with a lever on the side of the glasses permitting variations in visible light entering the eye. The color is also important when choosing standard sunglasses (e.g., yellow heightens contrast and distorts color perception).
4. When crossing streets, the green or white "walk" sign may not be visible. However, if the red is visible, one need not see the invisible. White and green lights tend to be seen easier in dim illumination.

5. Patterned carpet, stone floors and other ground surfaces which are not solid tend to cut down on information regarding stairs and other changes in terrain. For this reason, following another person is helpful. This is also helpful in moving through dimly lit restaurants, skiing or in crowds.
6. When following the directions of a storekeeper or stranger in the street, watch their body language. While you may not see the "exit" sign about which they are talking, their body language will gear you in the proper direction. Learning to "read" body language is also helpful when it is difficult to see facial expressions.
7. It is helpful to know when it is, or is not, necessary to use vision. When opening a door for example, one may visually locate the keyhole area and then use a hand position (one finger on the right of the metal) to efficiently place the key in the hole. One also need not see a telephone dial's letters and numbers when dialing, although vision may be used to locate the dial.
8. Check for color changes in grassy areas which may indicate a variation in terrain. The same color grass with height variation may indicate a path rather than a decline.
9. Lights spaced a specific distance apart (distances vary

with the individual) may be difficult to look at. Mirrors may also have a similar effect. Although these environments often cannot be avoided, sitting near a window may be helpful to provide natural lighting.

10. Learning to use shape cues of individuals is an aid to recognizing people at a distance (e.g., afro hairdo, particular gait, etc.). Outlines are also used in selecting objects such as busses, cars, etc.
11. Pattern cues can assist the low vision person in locating stores at a distance. A shoe store display, for example, may give the appearance of "polka dot" windows, while, at the same distance, a jewelry store shows a different pattern.
12. Walk to the other side of a street sign if you're facing the sun. Placing the sun at your back illuminates the sign.
13. Shapes and positions of shadows can be constructive or destructive to the use of vision. For example, the direction from which one approaches a flight of stairs at various times during the day, will present different shapes and sizes of shadows. When descending stairs, locating the first and last steps may be accomplished by seeing a triangular shadow at the edge of the stair. Shadows in parking lots, on the other hand, may hinder locating the edge of a curb. Learning to read shadows when they are present, and to utilize other cues when they are not,

helps to maximize visual functioning.

14. Some low vision individuals can alter visual input by tilting their heads. For example, some people with nystagmus can use a head tilt to cause an apparent separation of letters. This helps to eliminate a "crowding" effect in some printed materials.
15. When approaching the end of a block be alert for curb cuts. Those may be located by a slight change in the contour of the edge of a block, by different colorations in the curb cut (new cement), or by diagonal lines in the sidewalk.
16. Visual memory is often used in reading signs. Rather than reading a sign as one approaches it, a low vision person often reads a sign after having passed it. For example, while in a moving vehicle, one can make a mental image during the brief period of seeing the sign. It can then be recalled, although the sign was passed.
17. Be aware of general colors in subway stations and other illuminated indoor areas. Other people may tune into signs rather than noticing the colors being produced by certain types of lighting on wall surfaces.
18. When sightseeing with someone, an object, animal or event may briefly come into view. Ask your companion to use the face of a clock when alerting you to its location. It is easier to then look, with or without a telescopic aid,

when you know the object is at 10:30. This is easier than trying to figure out where "over there" is, or where he or she is pointing.

WHEN COOKING, SERVING AND DOING HOUSEHOLD CHORES:

1. Use colored masking tape at different temperatures on an oven dial (e.g., red at 350^o, blue at 400^o). This can also be done on radios to help tune in a favorite station.
2. Use frosted drinking glasses, or pour liquid into clear glasses before serving. This helps to locate the glass.
3. Use a dark colored cutting board for light colored foods and a light colored cutting board for dark colored foods (e.g., cheese on a brown board). A clear cutting board can be placed on different surfaces to alter background color. The added contrast is helpful when slicing.
4. Pour liquids against backgrounds which show contrast to the color of the liquid. White milk against a white or off white wall is difficult to see.
5. Use a pot with a flat color, rather than aluminum, on the inside. It will help to see water boiling and various other foods.
6. Place tape around a liquid measuring cup which is made of glass. Markings on both sides of the glass may be confusing and the stripe will eliminate the need to see the

1/4 cup mark.

7. Place a contrasting colored tape around a wall socket. It will not be necessary to locate the socket with one's hand.
8. Look for basic shapes and colors in a supermarket. For example, two shelves with off white and some blue may indicate mayonaise. A secondary cue is a rectangle of red on the same aisle, which may be ketchup.
9. When choosing a shower curtain, a clear plastic one, with or without a design, allows more light to be transmitted than an opaque, solid one.
10. When placing furniture in a "conversational setting", consider the distance at which conversation would be most comfortable. Chairs placed too far apart may be just out of a comfortable visual distance for some low vision individuals.
11. When white furniture is placed against or near a white wall, the edge of the furniture may be difficult to detect. Place a plant or brightly colored object at or near the edge, to provide cues regarding edge and height of surfaces.
12. Avoid bright patterns for such items as table cloths and furniture upholstery. They are often difficult to look at for a large area, and small objects placed on or near

them may be difficult to locate.

WHEN CARING FOR YOURSELF AND FOR CHILDREN:

1. Bright, solid clothing on young children helps facilitate locating them in a store or recreational setting.
2. A yellow comb in a purse is easier to locate.
3. When choosing a wrist watch, a face with a solid background and contrasting hands may be preferred to a shiny surface with either gold or black hands.
4. Some low vision people find it more easy to read clocks with hands than digital clocks. If choosing a digital, however, check for size and shape of numbers (not box-like) as well as the colors of the numbers and background.
5. Medical thermometers are difficult to read. Clinotemp, Thermodot and other devices are easier to read. Some of them are oral thermometers which change colors as temperature rises, while others can be placed on the forehead and give general indications of low or high fever.
6. Stripes, spaced a certain distance apart, polka dots and some plaids may be very difficult to look at. When choosing clothing for yourself or others, solids or muted patterns are often desirable.

WHEN ENJOYING RECREATIONAL ACTIVITIES:

1. When doing needlepoint, hook rugs, etc. place a dark cloth below the canvas. The strands of the canvas will stand out.
2. When sorting two yarns or threads, with a slight difference in color, compare each strand to a "bunch" of that color. Against a solid background of color, it is easier to discriminate which strand is needed.
3. While hiking and climbing, "measuring" a level against oneself makes it easier to judge a height (e.g., the rock is up to my knee). When going down, without depth perception, being second in line is helpful. Rather than checking shoulder height (see section on travel), check the level of your feet against the person below (e.g., your feet reach his/her knee).
4. Choose balls and other objects which are in motion, to contrast with the background (e.g., orange tennis balls, white or yellow ping pong balls). A stripe around a moving ball will give it a flicker effect. While some people prefer catching or hitting a ball which comes directly at them, others prefer a "high fly", so that the ball will be seen for a short while against the sky. Using a larger than average ball and/or a larger than average tennis racket may also be helpful, and it does not detract from the fun of the game.
5. When looking for friends in a movie, walk up to the

screen, turn around, and let the light from the screen (preferably a sun or a snow scene) illuminate the audience.

6. Use a rear screen home projector rather than a screen onto which the film is projected from the front. Although a rear screen unit may be purchased at low cost, one may also be made with a translucent screen and a mirror. The rear screen set up allows the viewer to sit directly in front of the action without blocking the light from the projector.
7. Color TV's often permit some low vision people to sit a little further from the screen. As with colored pictures, the detail may be more easily seen.
8. Leave a light on in the room while watching television. Although this is recommended for all viewers, it may particularly be helpful for some people with nystagmus. The bright light from a TV in a darkened room appears to oscillate. A level of illumination in the room "grounds the light".
9. Photography may be used as a hobby and/or as a method for maximizing visual abilities. Taking a photograph and enlarging it may show facial features to a person who can't see others' facial features, or it may be used to enlarge a variety of objects (e.g., a new pendant or coin). Telephoto lenses, while larger than

hand held monoculars, can be used to view distant objects. Some instamatic cameras, when turned toward the picture taker become instant, low power monoculars, as the viewer looks through the viewfinder. For the hobbyist who has difficulties in focusing, the new autofocus cameras are helpful. Photos can be enlarged and cropped on an enlarger in the darkroom.



BASIC OPTICS AND CHARACTERISTICS
OF LOW VISION OPTICAL AIDS

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BASIC OPTICS AND CHARACTERISTICS OF LOW VISION OPTICAL AIDS

Introduction

An understanding of the basic optics, characteristics, and advantages/disadvantages of low vision optical aids is crucial to the success of all aspects of a rehabilitation service utilizing optical aids. The rehabilitation specialist and low vision aids trainer must be well-grounded in the fundamentals relating to optical aids in order to:

- explain the basic mechanics of the aid to the client
- appropriately evaluate the functional implications of the aid for each individual client;
- plan a relevant, individualized training program for each client
- write out meaningful follow-through, at-home instructions in the use of the aid for each individual client

The contents of this chapter will be presented in the following order:

I. BASIC OPTICS

A. The Optics of Light

B. The Optics of Lenses

C. The Optics of Low Vision Aids

1. Microscopes and Magnifiers
2. Telescopes

II. CHARACTERISTICS OF MICROSCOPES

- A. High Plus Lenses in Spectacle Frames
- B. Bifocal and Trifocal Spectacles
- C. Telemicroscopes

III. CHARACTERISTICS OF MAGNIFIERS

- A. Hand-held Magnifiers
- B. Stand Magnifiers
- C. Illuminated Magnifiers

IV. CHARACTERISTICS OF TELESCOPES

- A. Introduction
- B. Hand-held Monocular Telescopes
- C. Clip-On Monocular Telescopes
- D. Binocular Telescopes
- E. Bioptic Telescopes
- F. Full-field Spectacle Mounted Telescopes
- G. Contact Lens Telescopic Systems

V. BIBLIOGRAPHY

I. BASIC OPTICSA. The Optics of Light

Light rays travel in a straight line. Light rays diverge from an object point and converge at an image or focal point. An optical system is necessary to cause the diverging rays to converge to form an image. The optical

systems involved in low vision aids are lenses, combinations of lenses, and the human eye.

The speed of light changes as it travels from one medium to another. When a light ray passes from air into glass, its speed decreases. If the light ray is perpendicular to the surface of the glass, its speed will decrease, but it will not bend (Figure 1).

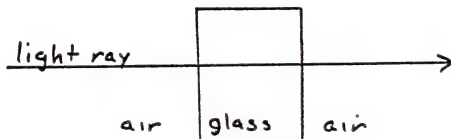


Figure 1.

If the light ray is not perpendicular to the surface of the glass, it will bend, or be refracted, as its speed decreases. The light ray will be refracted toward a line which is perpendicular to the glass surface at the point where the light ray enters the glass (Figure 2).

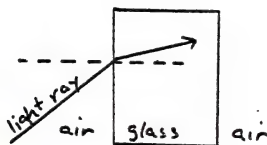


Figure 2

As the light ray passes through the glass and back into air, its speed increases, and it is refracted away from the perpendicular (Figure 3).

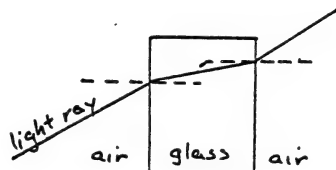


Figure 3

B. The Optics of Lenses

Light rays emanating from a source are considered to be parallel rays when they are more than 6 meters from their source. A convex (plus) lens can cause parallel light rays to converge at a focal point (Figure 4), or cause divergent light rays to become parallel (Figure 5).

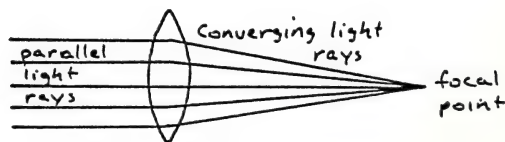


Figure 4 Convex Lens

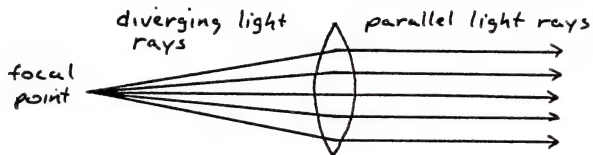


Figure 5: Convex Lens

The amount of curvature of a lens determines its strength. The stronger (thicker) a lens, the more it refracts light rays, and the shorter its focal distance (the distance between the lens and its focal point) (Figure 6 and 7).

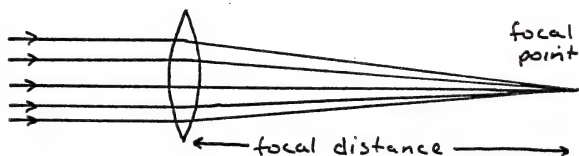


Figure 6

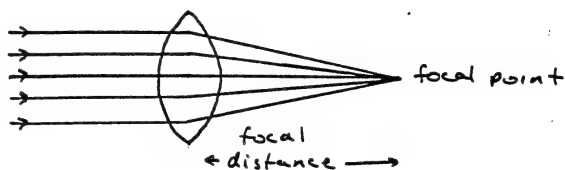


Figure 7

The focal distance of a convex lens is expressed as a positive number.

A concave (minus) lens causes parallel light rays to diverge (Figure 8).

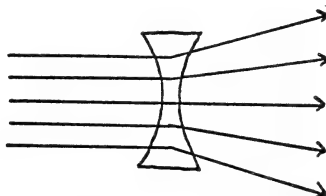


Figure 8 Concave Lens

The focal point of a concave lens is the point from which the light rays appear to be emanating (Figure 9).

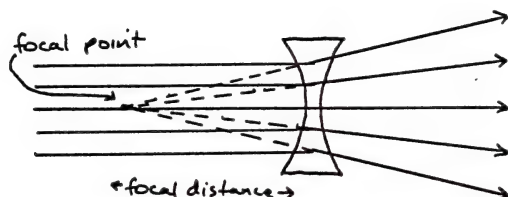


Figure 9

The focal distance is the distance between the lens and the focal point. The focal distance of a concave lens is expressed as a negative number.

The focal distance of a lens is determined by its strength. The strength of a lens is measured in diopters. To determine the focal distance of a convex or concave lens, divide 100 by the power of the lens in diopters; thus, a 5 Diopter lens would have a focal distance of 20 centimeters.

C. The Optics of Low Vision Aids

1. Microscopes and magnifiers: Microscopes and magnifiers are convex lenses which are used to focus an image on the retina. The lenses themselves do not magnify the image. When using a microscope or magnifier, a low vision person can bring reading material close to his eyes without losing

clear focus. The closer the object is, the larger its image will be on the retina. In order for the image to focus clearly on the retina, the reading material must be held at the focal point of the aid.

In order to determine the focal distance, the following information must be known:

1. Diopters = D
2. Magnification = X
3. $X = D/4$
4. $D = 4X$
5. Focal Distance = f
6. $f = \frac{100 \text{ cm}}{D}$

If a person is using a 16 Diopter microscope or magnifier, he should hold the reading material 6.25 centimeters or 2.5 inches from the lens ($2.54 \text{ cm} = 1''$)

$$f = 100 \text{ cm}/D$$

$$f = 100 \text{ cm}/16$$

$$f = 6.25 \text{ cm or } 2.5 \text{ in.}$$

Sometimes the power of the microscope or magnifier will be noted "X" instead of "D". For example, a ± 16 microscope may also be referred to as a 4X microscope. When determining the focal distance, simply convert magnification into diopters ($D=4X$) to use the above formula.

The distance between the lens and the eye may change, but the distance between the lens and the object may not. The field of view will increase as the aid/object unit is brought closer to the eye, but the magnification will remain the same.

2. Telescopes: A simple Galilean telescope has a concave and a convex lens enclosed in a metal or plastic housing. The object being viewed through the telescope must be 6 or more feet from the viewer. The parallel light rays from the object are converged by the convex objective lens. These converging rays are refracted by the concave ocular lens and emerge from the telescope parallel to each other. The viewer's eye refracts these parallel light rays so that they come to focus on the retina.

II. CHARACTERISTICS OF MICROSCOPES

High Plus Lenses in Spectacle Frames: These are generally prescribed monocularly, when higher powers are required, because: 1) the close working distance prohibits sufficient convergence for binocular focus and, 2) most individuals with low vision have better acuity in one eye than in the other. The field of view seen through high plus spectacles is usually greater than that of other types of microscopes, but there are observable aberrations in the periphery of most of the lenses. Because of this, one should not scan

with his eye when reading, but should move either his head or the printed material. When a person using a very high power microscope looks up from the printed material, he may initially become confused. It will be helpful at that point to rediscuss the principle of focal distance and the purpose of the aid. Because of the extremely short focal distance of these aids it is often difficult to use them for writing purposes.

Bifocal and Trifocal Spectacles: Bifocal spectacles have a reading lens set low in the carrier lens, which is usually the student's regular distance prescription. The field of view of the reading section is generally small. If a person has difficulty locating the desired print in the near lens, he should first locate it through the center of the distance lens, and then lift his chin slightly until that print is seen through the reading section of the lens. When walking, one should look over the reading section. With experience, he will become less concerned about the blurred area caused by the reading section. When using stairs, one should locate the first step visually, making sure that the step and his foot are both seen through the distance lens. Then he may ascend or descend without using his vision, but using an available railing.

A trifocal has three lenses: one for focusing at near,

one for intermediate distance, and one for far distance. The near correction may be in the form of a microscope and the distance correction, a telescope. One utilizes the different sections by either lifting his chin, dropping his chin, or turning his head slightly to the side.

Telemicroscopes: This device is a telescope with a convex (plus) lens attached to the objective end of the telescope. This attachment is usually called a reading cap. Caps of different powers increase versatility by enabling the system to focus at near or intermediate distances. Although they increase the working distance and, with most types, free both hands, they are often more difficult to use because of the smaller field of view and the more critical depth of focus. The total power of the system is found by multiplying the power of the telescope (in X units) by the power of the cap (in X units). For example if a person is using a 6X telescope with a +8 reading cap, the total power of the telemicroscopic system is 12X. This is determined by first converting the (+8) dioptic power of the reading cap into (2X) magnification power:

$$X = D/4$$

$$X = 8/4$$

$$X = 2$$

Then the power of the reading cap is multiplied by the

power of the telescope:

$$(2X)(6X) = 12X$$

12X = the total power of the telemicroscopic system

It is important that the cap be fully attached to the telescope or clarity will be reduced.

Telemicroscopes may be either full-lens or bioptic, monocular or binocular, and hand-held or spectacle-mounted. Full lens telemicroscopes are used almost exclusively when the student is stationary, and are removed for walking. A bioptic telemicroscope is a miniaturized telescope set in the bottom, center, or top of a carrier lens. If it is set in the top, it does not interfere with use of vision for walking. Binocular telemicroscopes are possible when the power of the system does not preclude convergence. This type of aid can allow for an increase in the illumination on the image seen and can complement the field of one eye with that of the other.

CHARACTERISTICS OF MAGNIFIERS

Hand Held Magnifiers: These reading aids are convex (plus) lenses which can increase the size of a retinal image or can bring the image into clearer focus. A hand held magnifier provides maximum magnification when it is positioned at its focal point with respect to the reading material.

This focal length (the distance between the magnifier and the page) in centimeters, is determined by dividing 100 by the dioptric power of the aid. Thus, a 4.00 diopter magnifier should be held 25 centimeters (9.83 inches) from the page ($f = \frac{100 \text{ cm.}}{4} = 25 \text{ cm.}$). As long as the aid is that distance from the page, magnification will remain the same, whether the aid is 3 centimeters from the eye or 50 centimeters from the eye. However, the nearer the aid is to the eye, the larger the field of view seen through the aid (more letters seen at one time), and the smaller the apparent distortion. An increase in the power of a magnifier will result in: an increased amount of magnification, a decreased and more critical focal length, a decreased working distance (the distance between the aid and eye), a decreased field of view, and, often, a decreased reading speed.

There are many advantages to the use of hand held magnifiers. They are readily available and are relatively inexpensive. Because they are widely used they are often more cosmetically acceptable than similar lenses in spectacle form. The working distance is also more "normal". Most hand held magnifiers are portable, a convenience appreciated by shoppers, students, technicians, etc. who need an aid intermittently to examine details or small print. It is generally easier to locate and maintain one's place

on a page when using a magnifier than when using a microscope. Older students often appreciate the fact that when they look up from reading with a magnifier, their surroundings are in normal perspective and not blurred, as they would be when looking through a microscope. A person reading with a hand held magnifier requires less accommodation than he would when reading with a stand magnifier or a microscope. Most magnifiers permit binocular viewing. Magnifiers are also helpful for specific tasks which preclude getting one's head (and spectacles) close enough to what one wants to magnify.

Magnifiers do present some problems to users. The field of view of a 10.00 diopter lens is approximately 4 times smaller when it is held 10 inches from the eye than when it is 1-inch from the eye in a spectacle frame. Also, unless a reading stand is used, both hands are involved in holding the aid and the reading material. Some people find it difficult to hold the magnifier parallel to the reading material. Effective use of a hand held magnifier requires good hand-eye coordination.

Stand Magnifiers: Stand magnifiers are convex (plus) lenses mounted in a stand or raised up from a page. The distance the lens is raised is slightly longer than the focal length of that aid. If the distance between the

aid and the page were the same as the focal length, there would be increased aberrations in the periphery of the lens. Because of this difference in distance, the image produced by the magnifier is not in focus unless the eye can accommodate for the divergent light rays (about 2.5 diopters), or unless the reader wears a plus spectacle lens (reading glasses).

Use of a focusable stand magnifier can alleviate this problem. By moving the lens toward or away from the reading material you are inducing a correction for myopia and hyperopia. These aids are generally held near the eye with the reading material resting against the base of the stand.

The advantages of the stand magnifier over the hand held magnifier relate mainly to the spatial relationship between the aid and the reading material. When the reading material is against the base of the stand, it is in focus. It, therefore, eliminates the need to hold the aid and reading material steady, parallel to each other, and the correct distance from each other. It is usually the aid of choice for people with hand or arm tremors.

As is the case with the hand held magnifier, both hands are needed to hold the stand magnifier and the material being read. When using a stand magnifier, the tendency is for a person to place the reading material on a desk or table,

place the stand on the reading material and lean over to read. In order to avoid this type of postural strain, it is even more important to use a reading stand in a vertical position, placed a comfortable distance in front of a seated reader.

Illuminated Magnifiers: There are some hand held and stand magnifiers available with an integral light source. This type of aid is particularly useful for people who are using higher powered aids. As the power of a magnifier increases, the distance between the aid and the page is decreased and the right amount of light becomes more critical. Also, higher powered lenses absorb more light than lower powered lenses, so less light reaches the page through the aid. It is difficult to introduce light into the small space between a high powered aid and the page, without causing glare which would effect reading performance and comfort. Illuminated magnifiers have a built-in light source, either electrical or battery operated from which light shines onto the page. Because the light comes from within the aid, the stand itself does not cast a shadow, as frequently occurs when the light source is external to the stand magnifier. It also enables one to use a magnifier in dark or dimly lit area such as restaurants and theatres.

CHARACTERISTICS OF TELESCOPIC AIDS

A. Introduction:

Telescopic aids are prescribed to give a partially sighted person a larger image of an object. Because Galilean telescopes produce an erect image and are smaller and lighter than astronomical telescopes, which produce an inverted image, Galilean telescopes are most often used by low vision individuals.

The component parts of a telescope are the ocular lens (the concave or minus lens which is nearer to the eye), the objective lens, (the convex or plus lens which is nearer to the object), and the housing (which is usually metal or plastic). There is a space, usually air-filled, between the ocular and the objective lenses.

A telescopic aid is labeled to indicate its power and field of view. For example, an aid with a notation of 6 x 30 with a field of 7.5° indicates that this particular aid forms an image of an object that is six times larger than the actual object and has a strength of 24 diopters ($1X=4D$). This telescope has an objective lens which is 30 millimeters in diameter. The maximum field of view that can be seen through this telescope is 7.5° . The field of view of some telescopes is noted as x feet at 1,000 yards. A telescope with a field of 7.5° would permit a person to

see the entire width of an object which is 394 feet wide and 1,000 yards from the viewer (if the person's pupil size permitted that wide an angle of view). To compare the fields of two telescopes, one of which is designated by degrees and one by feet, multiply the number of degrees by 52.5 (the number of feet in 1° at 1,000 yards). The field of view generally decreases as magnification increases. For example, the Selsi monocular with interchangeable objective lenses offers an 11° field with the 6x objective, but only a 8.2° field with the 8x objective.

The brightness of the image produced varies from one telescope to another. One measure of light transmission may be determined by dividing the diameter of the objective lens by the power of the telescope. For example, a 6 x 30 telescope would enable a 5-millimeter area of light rays to reach the eye. A 6 x 18 would only permit a 3-millimeter area of light rays to reach the eye. If the low vision individual's pupil is 5 mm in diameter he would receive a brighter image when looking through the 6 x 30 than the 6 x 18. If his pupil is only 3 mm, he would receive an image of the same brightness when using the 6 x 18 as when using the 6 x 30. Because different illumination levels may affect the size of a person's pupils, it is important that the person identify tasks for which he would like to

use a telescope before it is prescribed. "A patient who is in need of a bright image who has a 2mm pupil in daylight, but a 5 mm pupil at night, would find a 6 x 15 telescope satisfactory in daylight, but a 6 x 30 better at night. However, a 6 x 50 would not further improve the image brightness for him" (Mehr & Freid, 1975).

Hand-held Monocular Telescopes: Hand-held monoculars are the most frequently prescribed telescopic aids. They are smaller, lighter, and less expensive than binoculars of the same power, and they require only one hand to steady them. Because most low vision individuals have better vision in one eye than in the other, monoculars are usually the aid of choice. Monoculars may be either focusable or afocal. Most monoculars can focus only on objects which are more than 6 feet away, but a few short-focus telescopes can bring objects only 1 foot away into clear focus, without the use of reading caps. Other factors which are considered when prescribing a monocular include power, field of view, light transmission, chromatic aberrations, linear distortion, size, weight, storage convenience, appearance, and cost.

Clip-on Monocular Telescopes: Clip-on monoculars have a U-shaped wire attachment that slips over and behind regular spectacle lenses. Because of the additional weight, spectacle frames should fit securely. Clip-on monoculars are

often prescribed for persons who have difficulty holding a monocular telescope, for those who need to look through a monocular for a longer time than they could hold the aid steadily; and for those who need to have their hands free for other tasks. These aids are useful for watching television, movies, spectator sports, etc. They are not as helpful, however, for those who need a strong correction, because they are commercially available only in powers less than 3x. Additional lenses (reading caps) may be added to these telescopes enabling a student to work at near and intermediate ranges.

Binocular Telescopes: Because of their size, weight, and appearances, binoculars are not commonly prescribed by eye care specialists. They should be considered when appropriate, for several of the advantages they offer. For a person with similar (but not necessarily equal) vision in both eyes, binoculars provide an image with more depth. Binoculars may be focused either by adjusting each ocular individually or with one central control. Those with a central focus usually have a diopter adjustment on one side to correct for unbalanced vision. Many binoculars are equipped with larger objective lenses than are found on monoculars. Some individuals appreciate the increased image brightness this provides. Larger objective lenses can also

reduce the number of momentary blackouts of the image caused by slight movements of the binocular. Individuals with motor control problems can occasionally balance and support binoculars more steadily and for longer periods of time than monoculars. By holding the aid with both hands and bracing it against the bridge of the nose and other facial bones, one can avoid rotation of the aid. Genensky suggests that students, who must shift frequently and quickly from reading material on a chalkboard to reading notes on their desks, could place a reading lens on one of the objective lenses of the binocular. They could then shift quickly and smoothly from one eye to the other as they shift from near to distance tasks and reverse. This modification would eliminate the need for putting down and picking up different aids as the task requirements change (S.M.Genensky, 1973).

Bioptic Telescopes: Bioptics are miniaturized telescopes placed in a person's regular spectacle lens. They are prescribed for people who require telescopic magnification while having both hands free. These telescopes also help those who need distance magnification for longer periods of time (than for which they could hold a hand telescope steady) or for those who need magnification intermittently. In bowling, for example, a person could use the carrier lens for orientation to the lane and for directing the ball, and

the bioptic for watching and counting the pins. In art work, a person could look through the carrier lens while painting a canvas, and through the telescope while observing the scene being painted. Bioptics may be used for intermittent spotting or for sustained viewing.

Placement of the bioptic will vary according to its function. A person who is using a bioptic to read signs or traffic lights while driving a car, riding a bicycle, or walking will have the bioptic placed high in the carrier lens. He will look through the carrier lens a majority of the time, and drop his head and raise his eyes to look through the telescopic lens only when it is necessary to see a sign, light, or object in greater detail. A person using a bioptic for reading or writing only (with a reading cap attached) may desire to have it set low in the carrier lens. Surgeons often use bioptic telescopes set in the lower position for microsurgery.

If the bioptic is to be used for intermittent spotting of an object in the distance, the person must learn to move from one visual field to the other smoothly and without losing orientation to the immediate surroundings. Initially, the person should look through the carrier lens to locate the object he wishes to see. He should then move his head and eyes until the object is seen, in sharp detail, through

the telescopic portion.

Using a variety of reading caps will increase the flexibility of this optical system. A person who uses a bioptic aid primarily for distance viewing may use it without a cap for such tasks as: following signs to locate a library, the reference room, and the desired aisle. With a cap for intermediate ranges, he could look up a text in the card catalogue. With a near vision cap, he could scan the book. He would probably use a more conventional near vision aid to actually read the book, because the more frequently higher placement of the bioptic may make sustained reading uncomfortable.

Some problems are encountered by low vision persons because of the limited field of view obtained through a bioptic. Because a bioptic is a miniaturized telescope, its field of view is frequently smaller than that of a handheld telescope of the same power. This field restriction can be alleviated somewhat by using a wide-angle bioptic. Another field problem is the ring scotoma caused by the bioptic lenses and housing. The miniaturization of the telescope makes the manufacturing of higher powered biotics difficult. Most biotics used by low vision persons are less than 6x in power. Many biotics are afocal, and cannot be adjusted to view objects at different distances or

to compensate for refractive errors.

Some persons initially have difficulty in knowing when they are looking through the telescopic lens and when they are looking through the carrier lens. If this discrimination difficulty exists, it can be reduced by initially blocking off the carrier lenses and developing visual skills using only the telescopic portion. Skill development with a bioptic is similar to skill development with a hand-held monocular, but it is more difficult and requires more practice, because the field is usually smaller. As the bioptic user becomes more capable and confident with the use of the bioptic, he should begin to work with the bioptic and the carrier lenses simultaneously. He should work toward maintaining his orientation to the immediate surroundings, while examining objects in the distance with the telescope.

If the person reports double vision, or if straight horizontal lines appear to him to be curved, he should be referred to the clinic for a re-evaluation of aid and/or the placement of the bioptics.

Full-field Spectacle-mounted Telescopes: These aids are prescribed for persons who need telescopic magnification with a large field of view. While wearing a full-field telescope, a user can see only the magnified image. Because there is a distorted peripheral view of the surrounding

area, the wearer usually will not have sufficient visual spatial orientation for safe movement. Especially if the aid is higher than 2x power, continuous magnification and peripheral distortions make movement a difficult if not dangerous venture. These aids are used mainly for sedentary vocational and recreational purposes. Most full-field spectacle-mounted telescopes are afocal and are available in powers of 6x and less. Reading caps enable persons using these aids to focus at near and intermediate distances.

Contact Lens Telescopic Systems: In this system a Galilean telescope is formed by an ocular lens, which is a minus contact lens on the eye, and an objective lens, which is a plus lens in a spectacle frame. Its greatest advantage is the increased field of view, usually greater than 50° , although there is some distortion in the periphery of the field. This system can be worn full-time, and its appearance is usually more acceptable than that of the other telescopes described above.

This system is difficult to fit, however, and the two lenses must remain in correct alignment at the proper distance from each other. Although this system offers a wide field of view, the magnification gained is usually less than 2x which is not sufficient magnification to allow many low vision persons to perform tasks visually. In addition,

some individuals will be unable to adjust to the continuous magnification of this system. For these reasons, the contact lens telescopic system is rarely prescribed.

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TRAINING WITH NEAR AND INTERMEDIATE DISTANCE
OPTICAL AND NON OPTICAL AIDS

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TRAINING WITH NEAR AND INTERMEDIATE DISTANCE
OPTICAL AND NON-OPTICAL AIDS

Introduction

Many authors have extolled the virtue of training in the low vision sequence but the professional who is willing and able to provide this training is often confused. She/he knows why the training is necessary; the client often rejects the low vision aid without it. What this training entails, however, and how it should be structured to reach the client and change behaviors is much less clear cut.

Training in the use of low vision aids is provided to assist the client in making the transition from the clinical setting to the environment where the low vision aid will be used on a daily basis. The goals for training the client in the use of low vision aids are to enable the client to:

- a. Review and set specific and realistic objectives for the use of low vision aids.
- b. Learn the level and usefulness of his/her remaining vision.
- c. Solve specific problems encountered with the use of vision and low vision aids for the stated objectives.
- d. Learn methods of coping with any anxiety and stress encountered in changing habits and incorporating aids into his/her lifestyle.

- e. Enlist the acceptance and support of family members and peer groups for the use of vision and any prescribed visual aids.

It is conceivable that any task usually performed at arm's length or closer could be enhanced with the use of low vision aids. The primary objectives for the use of low vision aids, stated by the user population, is reading print and music, followed by (not in order) writing, needlework, typing, playing a musical instrument, recreational activities (cards, checkers, backgammon), stamp and coin collecting painting and other homemaking, personal management, shop and vocational activities. A plethora of low vision aids will be useful to the client who wants to remain as visually active as possible.

Each aid and each client contains an intrinsic set of limitations and potentials which must be matched with objectives and specific training procedures. The training professional may sometimes feel as if she/he is assembling pieces of an intricate puzzle! Due to the individual nature of low vision, flexibility and creative problem solving remain the keys to success.

The rest of this chapter has been separated into the following broad areas related to training:

- I. Training Terms
- II. Training Environment and Equipment
- III. Preparations Prior to Training
- IV. Sequence for Near Vision Training
- V. Training Tips for Specific Tasks
- VI. Training with the Closed Circuit Television System for Reading/Writing
- VII. Instructions to the Client for Home Practice

I. TRAINING TERMS

- Low Vision Aids - Optical and non-optical aids which allow their users to maximize residual vision and function more independently in selected tasks.
- Optical Aids - Aids that incorporate special lenses and prisms in powers greater than the refractive error for the purpose of enlarging an image.
- Non-optical Aids - Devices which are not lenses, but make using vision easier (for the purpose of this paper tactual aids have been excluded).
- Near and Intermediate Low Vision Aids - Those aids with a working distance of arm's length or closer.
- Working Distance - The distance at which the object or regard is seen in focus. This distance is measured from the front of the eye (usually measured from the spectacle plane in front of the lens) to the object of regard.
- Focal Distance - The distance at which a target must be positioned to be in optical focus from a lens. Calculated in centimeters by the formula $FD = 100\text{cm}/D$

FD - focal distance

D - dioptric power of the lens being used.

The focal distance of a telemicroscope is calculated by the dioptric power of the cap and the distance is measured from the plane of the cap.

Fixation - The ability to maintain an image on the retina.

Eccentric Viewing A shift in the position of the eye to achieve the fixation necessary for a visual task.

Scanning - Eye movements in a visual searching pattern used in an effort to locate an object of regard. A systematic visual following pattern used in noting detail inside an object of regard. The left to right visual pattern used in print reading.

Tracking - Visually following a moving object of regard by use of eye and/or head movements. Used in following pen in writing and needle in sewing.

II. TRAINING ENVIRONMENT AND EQUIPMENT

The environment in which training of low vision clients will take place will be varied. Ideally, the client receives preliminary training with a loaner aid at the clinic or doctor's office, and follow-up training in the setting in which the aid is to be used (home, school, job, etc.). The client then returns to the office/clinic setting for follow-up evaluation and training and the process continues until a final prescription is dispensed, commonly after the third or fourth visit.

Sometimes this procedure, or parts of it must be modified due to lack of funds, lack of training professionals, the philosophy of the doctor and/or clinic or the proficiency of clients whose training needs are minimal.

Often the instructor will find it necessary to adapt the training sequence to several environments; the home, school, job setting, nursing home, senior citizens center, rehabilitation center as well as the clinic. Some suggestions for the equipment needs for training follows. For the "itinerant" instructor it may be necessary to adapt some of the equipment for portability (e.g. use a clamp-on lamp) and take along only those materials needed for a particular lesson.

1. Environment - Comfortable chair with wheels, arms, high back for positioning and postural comfort. Controllable background illumination with rheostat on overhead lights.

shades or drapes on windows, controlled temperature and ventilation. Large table or desk on which to perform near tasks. Storage space for materials used in various tasks.

2. Materials - (Ordering information follows for items marked with an asterisk).

*stop watch

*Light meter

measuring rule

*reading cards such as the Feinbloom sub-normal vision reading card or Sloan continuous text cards if possible. Reading material in a variety of sizes, topics, educational levels.

*Several controllable illumination sources - flex arm, goose neck, incandescent, fluorescent, high intensity (with rheostats if possible).

needles

thread in several colors

sewing material in several colors .

knitting needles

yarn in several colors

crochet hook

clipboard

pipe cleaners

grocery items with labels and prices

other household, recreational or vocational items as needed.

dark construction paper

scissors

tape

*patches for eye and lens

Note: clients should be given instructions to bring any which they wish to view that are not stocked, if the training takes place at the clinic.

3. Non-optical aids -

*reading stands - several floor and desk top models
if possible

*typoscope, markers

felt tip pens in several colors and black

*large print books and magazines

*large print phone dials

*large print and Low Vision playing cards

*bold line paper

*large print checks

*Large eye needles

*needle threaders

*self threading needles

*writing guides (check, envelope, letter writing
signature)

other illumination controls

*absorptive lenses

yellow filter lenses

frame shields

colored filter sheets

INFORMATION FOR ORDERING EQUIPMENT:

1. American Printing House for the Blind
P. O. Box 6085
Louisville, Kentucky 40206

(Reading and music stands, large print checks, bold line and raised line paper, bold line graph paper, other large print and tactual aids).
2. American Foundation for the Blind
15 W. 16th Street
New York, New York 10011

(Large print phone dials, large print cards, large eye needles, writing guides, check stencil, needle threaders, sewing machine threaders, notched hem gauge, other tactual and visual aids and appliances).
3. Designs for Vision, Inc.
120 E. 23rd Street
New York, New York 10010

(Typoscope, sub-normal vision reading card).
4. Bernell Corporation
422 E. Monroe Street
South Bend, Indiana 46601

(Eye patch, lens patch).
5. New York Lighthouse for the Blind
111 E. 59th Street
New York, New York 10022

(Sloan reading cards, yellow filter lenses, absorptive lenses, visorlette).
6. Independent Living Aids, Inc.
11 Commercial Court
Plainview, New York 11803

(Sewing, writing, large print, other non-optical and tactual aids).
7. Recreational Innovations
P. O. Box 159
South Lyon, Michigan 48178

(NOIR absorptive lenses).

8. Olo Products, Ltd.
P. O. Box 613
Manhasset, New York 11030

(Olo absorptive lenses)
9. Vision Corporation of America
70 State Street
Westbury, New York 11590

(Velcro Glas-Strap for spectacles)
10. New York Times Large Type Weekly
229 West 43rd Street
New York, New York 1036
11. Reader's Digest Large Type Edition
Pleasantville, New York 10570
12. The Carroll Center for the Blind
770 Centre Street
Newton, Mass. 02158

(Aids and Appliances Review
Issue #2 July, 1979)
13. Mrs. Betty Jo Keitzer
1129 Peninsula Drive
Lake Wales, Florida 33853

(Keitzer checkwriting guide)
14. Colored filter sheets - available at theatrical
supply shops, ask for "theatrical gels".
15. Stop watch - athletic supply store.
16. Light meter - camera shops
17. Flex-arm architect's lamp (incandescent) -
department stores, artist supply stores.
18. Adjustable reading stand - plans for building available
from:
Feinbloom Vision Rehabilitation Center
The Eye Institute
1201 W. Spencer St.
Philadelphia, Penn. 19141

III. PREPARATIONS PRIOR TO TRAINING

Information from some other sources will be quite helpful in designing a beginning session and cluing in to specific aspects of the client's personality, background and vision.

Pertinent Information From Social Service Intake:

Type of loss	may indicate some of functional implications of the vision remaining i.e. characteristic fields and level of acuity.
Onset	recent onset - possible psycho-social difficulties advanced - adjustment may have been made congenital - possible lag in visual concept development.
General health	modify training for fatigue, physical problems.
Medication	some cause blurred or fluctuation in vision, photophobia.
Education	clue to reading ability sometimes general level of intelligence but not necessarily.
Employment	indication of motivation, seeking to remain active.
Leisure activities	seeking to remain active may be part of objectives.

Use of current Rx non-use may indicate no benefit

Use of any low vision aids

sometimes indication of motivation if
used successfully - if rejected may not
be interested in others.

Sometimes client looking for "miracle"
low vision aid.

Current ability to read or perform other visual tasks

indication of will to remain visually
active and independent - some clue
as to level of vision.

Preferred level of background illumination

indication of photophobia, glare sen-
sitivity or need for very high levels -
adapt training accordingly.

Any other disability

adapt, modify, simplify explanations
and/or procedures.

Stated objectives vague or sure of objectives?

realistic or far fetched?
may be clue to client sensibility
awareness and motivation.

Pertinent Information From Doctor's Examination:

Clinical Acutities

Unaided indication of level of remaining vision.

Aided if same as unaided, regular Rx may be
of little help, if improvement noted
client should be encouraged to use
regular Rx.

With low vision aid

if acuity level achieved is not commensurate with that expected with the amount of magnification used, may be clue to eccentric viewing problems or varying illumination. Doctor should note any difficulties, successes with taking acutities as well as visual postures.

Refractive error regular Rx may or may not be incorporated in the low vision optical aid.

Binocularity or bi-ocularity

training done with one eye, each eye individually or both eyes together.

Visual fields

Amsler grid measures central 10° may indicate
central scotomas, restrictions,
distortions encountered in reading
or other near task.

- Tangent screen measures central 30° and may be better indicator of placement of scotomas.
Scattered scotomas may not show.
- Arc perimetry or peripheral fields
visually more indication of vision for mobility purposes.
- Illumination indicates lighting to duplicate initially in training.
- Dr's assessment will indicate impression. Helpful for structuring training.
- Description of low vision aid(s) tentatively prescribed type, power, focal distance, field of view, on which eye it is to be used, tasks for which prescribed.
- Ocular health detects presence or absence of pathology, monitors progression or stability of disease or anomaly, may indicate reasons for eye pain, tearing, redness, swelling, etc. If pathology is active, patient may have psycho-social needs for support, may contra-indicate present use of optical aids.

Pertinent Information From Other Disciplines:

Information from other professionals should be scrutinized for facts and perceptions which will aid in structuring training.

Ophthalmologist	
Optometrist	other than low vision
Medical doctor	clinician
educator	
rehab teacher/counselor	
mobility instructor	
audiologist	
psychologist	
physical/occupational therapist	
other.	

Trainer's Responsibilities Prior to Training:

There are some preparations which will make the training sessions easier to organize and "flow" more smoothly. Some of them are merely common-sensical, and after training with several clients the instructor may want to add to his/her repertoire of preparations.

- a. Glean all information from reports, low vision and others.
- b. Become thoroughly familiar with optical aid prescribed and non-optical aids.
Try them yourself for the stated objective

to note intrinsic limitations and potential of the aids. Check to see if optical aid is same as one prescribed in doctor's report, and whether regular Rx has been incorporated. The regular prescription, while not always incorporated into the optical aid, will be important in some circumstances. Astigmatic correction (usually more than 2 - 4 diopters) will be included by the doctor if it is needed. Corrections for myopia and hyperopia are included depending on the number of diopters and magnification needs. Although the client may show no clinical difference with or without the regular correction, she/he may notice a functional difference on everyday tasks.

- c. Assemble all low vision aids, lighting needs, illumination controls and other materials.

IV. SEQUENCE FOR NEAR VISION TRAINING

The following sequence for near vision training can be helpful for structuring an approach to training with near aids. Whether the client is trained in the home, the clinic, on the job, or in other settings the importance of structuring and addressing each area of training separately cannot be minimized, especially if the client is having any difficulty adjusting to or using the aid.

The near training form is included so that notes about the use of vision and aids can be kept in a precise, organized and easily comparable method. A sample training form is included at the end of the sequence to serve as a guide.

In the sequence, instructions often include "work with doctor". Continuous communication and a strong working relationship with the eye doctor is vital to problem solving. The interdisciplinary team is only as effective as its communications and collective expertise.

Initial Training Session:

At the initial training session with the client, the sequence which follows is suggested:

- a. Note general manner of client, observe
any signs of fatigue, anxiety, stress
(clenched fists, shallow breathing, confusion, stammering, nervous laughter,

sighing, tight shoulder/neck muscles, slumping and so on).

- b. Due to need for constant conversational dialogue, may begin session by chatting socially for a brief period about client's home, family background, job, hobbies, etc. to increase feelings of security and relaxation.
- c. Check client's understanding of his/her eye report, acuities, fields, etc.
An interpretation into more lay terminology may be in order.
- d. Discuss functional implications of acuity level and fields of view for near tasks.
- e. Explore client's objectives
 - 1. set an order of priority.
 - 2. break each objective into component parts.
- f. Demonstrate the low vision aid. Allow client to examine it visually/tactually and briefly explain advantages, disadvantages and how it is used. Clear up any misconceptions which may be lingering from doctor's examination.
- g. Involve family members or peers in explanations, discussions if helpful. They

may provide excellent support system and aid in home training. Watch for negative influence; some clients do best alone.

- h. Discuss lighting. Does client prefer bright or dim lighting? Do lighting needs fluctuate from day to day? Is he/she bothered by glare? If not training at home, ask preferred lighting or available lighting for objective stated.

TRAINING SEQUENCE:

Technique

Unaided fixation

"Area of Clearest Vision"

Procedure

1. Patch eye not being used.
 2. Provide client's preferred illumination on target.
 3. Direct client to focus on a target using area of clearest vision. (Face of training professional, small object with good contrast, symbol on an index card).
 4. Note visual posture, shift in eye, head or body.
 5. Discuss with client. Ask to shift only eye, not head or body to see target as clearly as possible. Note position. Ask client to shift eye to left, right, top and bottom of target.
- Where is it seen most clearly? Record on form as "area of clearest vision" i.e. bottom left field, upper right field, central, etc.

Difficulties maintaining unaided fixation

1. Once target is seen, attempt to increase time

image is held. Use a stop watch for objectivity.

2. Use eye patch with small hole in middle. Instruct client to look through hole with area of clearest vision by holding up to eye. Note position. Attempt to move to center with successively smaller steps.
3. If client cannot view through small hole in eye patch, occlude portions of a plano lens (lens without power) placed before the eye. Use plotted field from tangent screen or amsler grid as a guide i.e. if plotted fields show lower field loss, occlude that area of lens then occlude area to right and left of center and note if client is able to maintain image of target more clearly or for longer periods.
4. Experiment with other areas of the visual field patched. Instruct client to report which makes fixation easier.

Lighting


1. For client's preferred illumination, shine light on target by positioning it over shoulder of eye being used (not towards face).
2. Record both position of light and preferred level of illumination. Use a light meter at each session so that lighting may be duplicated at training and home practice sessions.
3. Discuss with client to assure his/her understanding of lighting needs.
4. Record on chart along with illumination controls and contrast used in each task component.

Note: Lighting needs may vary depending on fluctuating vision, target size, contrast with background, etc.

Difficulties maintaining appropriate illumination

1. Use rheostat for lower, higher levels.
2. Use different positions, over-head, to side, etc.
3. For dimmer lighting use overhead lights only, experiment with rheostat and shades, etc.

Focal Distance

4. Experiment with several different lighting sources, fluorescent, incandescent, high intensity, regular table or pole lamps.
5. Experiment with other illumination controls for photophobia such as visors, shields, sunlenses, absorptive lenses.
6. Yellow lenses or yellow filter sheet will cut glare, provide contrast. (Yellow filter sheet turns blue or purple ink to black).
Typoscope or reading slit will also serve this purpose. A typoscope is a black plastic or cardboard card with a reading slit cut out so that a line of print is positioned in the cut out.
Illustration - 
7. Experiment with other colored filter sheets for reading to cut glare i.e. pale blue, pale peach, light beige or pale yellow.
1. Place optical aid on client, adjust.
2. Patch eye not being used.

3. Instruct client to view through center of lens
4. Position the target (symbol or word on an index card) at the appropriate distance until client recognizes it.
5. Demonstrate depth of focus by moving card too close or too far away so that client notices difference.
6. Have client hold card at appropriate focal distance for clear image, then blur.
7. Measure working distance, compare with focal distance, record on chart.

Note: Working distance may be different from focal distance due to refractive error, accommodation or blur interpretation. Make certain the card (and all reading material) is held on the same plane and the approximate height of the lens used for reading.

Difficulties with focal distance

1. Use reading stand.

2. With microscope or telemicroscope attach pipe cleaner to temple frame to protrude appropriate distance, pipe cleaner must touch page.
 3. With microscope or telemicroscope use stiff cardboard, cut to appropriate length, position one edge at page other edge resting on frame of glasses.
 4. For difficulty with the focal distance of the hand-held magnifier, use stand magnifier in same power (doctor may need to add plus lens in spectacle for accommodation)
 5. Touch page to nose or end of lens and move out very slowly until print is clear.
1. Using preferred illumination have client hold target or place target on reading stand with finger on it.
 2. Have client find target through lens and position at correct focal distance.
 3. Note on chart.

Localization

Difficulties with localization

1. Use a typoscope or cut-out to make localization easier. Position cut-out around target and instruct client to find "window".
2. Increase contrast between target and background.
3. Have client position target in area of clearest vision unaided, then move lens into position in front of eye and focus on target.
4. Have client follow arm down to hand and finger or locate finger, then shift to target.
5. Have client employ a systematic searching pattern to locate target (i.e. top left to right, back to left and down, etc).
6. Bioptic telemicroscope - sight target through carrier lens, position barrel of telescope directly above target, move eye up into telescope. While viewing through telescope, slowly lower head until target is sighted. Apparent displacement occurs due to upper mount of bioptic. Explain displacement and instruct client to lower head more than

will seem necessary.

7. For reading, have client place finger at place where reading should begin by viewing unaided, (headline or top left of page) then move lens into position, focus on finger and shift to print.
8. For reading, get page of print in focus with lens, scan left to margin, then follow line edges up to top of page.

9. Note on form.

1. Instruct client to employ systematic scanning pattern to find target or inner detail on target.
2. For reading, client is instructed to read slowly from left to right, to scan back to first word of that line, then shift to line below.
3. Note on form.

Difficulties with scanning

1. Instruct client to use typoscope or marker under line.
2. Instruct client to position finger at beginning of

line, scan back to finger, then move eye and finger down together.

3. If reading is goal and scanning is difficult, a scanning exercise may be employed. Use dark lines and large numbers

1 _____ 2 _____

3 _____ 4 _____

5 _____ 6 _____

7 _____ 8 _____

9 _____ 10 _____

Client is instructed to look from 1 to 2, back to 1, and down to 3 etc. Words may be used at next level instead of numbers. Then intersperse words on the lines.

Aided Fixation

1. Client must regain fixation with each eye shift used in scanning, this is especially necessary for consistency in print recognition. If fixation is difficult, targets or details of targets will be "skipped" over while scanning.

Difficulties maintaining aided fixation

1. Increase target size.
 2. Consult with eye doctor to experiment with increased/decreased magnification.
 3. For clients who must eccentrically view, isolate target with a cut-out or use a pointer, move the pointer or cut-out in the scanning direction client must cultivate. Client learns fixation for scanning by tracking pointer or cut-out and noting details or targets seen.
 4. Use short words, easy vocabulary, large print for reading.
 5. Hand print or type exercises which are simple enough to master.
 6. Increase contrast.
 7. Increase target size or spacing between detail.
 8. Note on form
1. Instructor should note on form particular areas of strengths and weaknesses during training.

Difficulties/Successes

Expressions of client satisfaction/dissatisfaction should be noted.

2. Note client's understanding of use of low vision aid. Helpful to have client verbalize what aid is used for, how she/he will practice at home, etc. Clear up any misconceptions before client leaves practice session.
3. While using optical aids, some clients experience difficulty such as headache, eyestrain, dizziness, nausea, tension in back/neck muscles. Explain commonality of these phenomena and:
 - a. Instruct client not to look around room or at distance with near aids. Must be seated and view only target.
 - b. Decrease training session times and increase number of sessions.
 - c. Instruct client to initially relax facial, neck, back, and arm muscles, breathe deeply.
 - d. Patch eye not being used (unless patient is

binocular) to prevent facial muscles from squinting, or shutting unused eye.

e. Select times for practice session when patient is feeling fresh, not tired or upset.

Note: If symptoms persist, consult the eye doctor

V. TRAINING TIPS FOR SPECIFIC TASKS

<u>Task</u>	<u>Optical Aids Used</u>	<u>Non-Optical Aids Used</u>	<u>Training Tips</u>
<u>Reading</u>	<p>Hand-held magnifier stand magnifier microscopes (full-field) Bifocal, trifocal, half-eye) telemicroscopes (full-field, biopic surgical)</p>	<p>Typoscope or marker Reading stand Colored filter sheets large print Illumination controls</p>	<p>1. Always gear for success in training. Never allow client to continue struggling with print that she/he cannot recognize consistently. Replace with a sample of material in a larger size, or with more spacing and contrast until greater perception is achieved. A suggested sequence for training materials: a. 20-24 point print (5M) newspaper headlines, large Sloan reading cards, hand printed materials, first paragraph of Feinbloom reading card</p>

Task

Optical Aids Used

Non-Optical Aids Used

Training Tips

- b. 14-18 point (2-3M)
 - large print materials
 - large type Reader's Digest, New York Times Weekly, large type texts or library books, large print typewriter
- c. 8-10 points (1-1.5M)
 - Typed print, clear print with good contrast. For some clients spacing and contrast are more important than print size.
 - May help to use new ribbon.
- d. 8-9 points (1M)
 - Regular book print, library books, texts, etc. in good clear print on opaque, off-white paper (not paperbacks).

Task

Optical Aids Used

Non-Optical Aids Used

Training Tips

e. 7-8 point (1M)

Magazine print

similar to newspaper,

but better contrast, may

get glare from glossiness

of paper, use filter sheet.

f. 7-8 point (.8M)

Newspaper, paperback

poor quality paper, blurred

ink, make reading difficult

Teach client localization

of headline unaided, then

add optical aid.

Teach client to notice spac-

ing between columns, other-

wise she/he may read all

the way across.

g. 4-5 point (.5M)

Very small print

Task

Optical Aids Used

Non-Optical Aids Used

Training Tips

want adds, stock market,
dictionary, small bible,
telephone book
use marker under the line
for telephone and dictionary,
teach localization
of name/word by use of
key name/words at top of
page.

2. Success may also depend on
difficulty of print
easiest material will have
good spacing between lines
and good density.
Look for several different
type styles:
serif, sans serif, all
capitals

Task

Optical Aids Used

Non-Optical Aids Used

Training Tips

3. Practice material should be of several column widths.
4. Reading material should be appropriate to the comprehension level of the client. Initially, difficulty with reading requires an easier vocabulary of shorter words-gradually increase complexity until commensurate with client's level of understanding; whether fourth grade or post doctoral.
A suggested sequence:
 - a. Letter recognition
 - b. Short word recognition (2-3 letters)
 - c. Longer words (if not recognizable ask client

Task

Optical Aids Used

Non-Optical Aids Used

Training Tips

to spell or sound out
word phonetically).

d. Sentences

e. Short paragraphs (an-
ecdotes, jokes, quota-
tions, sayings).

f. Short stories

5. If difficulty with reading
comprehension persists, may
warrant referral to a read-
ing specialist.

6. Reading forms, bills, state-
ments, computer printouts,
etc.

a. Instruct client to scan
face of form to familiar-
ize him/herself with how
form is organized into
columns.

b. Instruct client in how

to find headings for columns.

- c. With two markers or typoscopes instruct client to use edges to place down and across appropriate columns to find desired entry.

7. Reading telephone book, dictionary

- a. Instruct client to locate guide words/names at top of page.

- b. "Skim" occasional words in alphabetical order to locate desired word/name.

- c. Use typoscope to isolate.

Task

Optical Aids Used

Writing

Microscopes in powers
of 4-5X or less
hand-held magnifiers
telmicroscopes

Non-Optical Aids Used

Felt tip pens, bold
or raised line paper,
script board, stencil
guides

Training Tips

1. Instruct client to find place where she/he wishes to begin writing.
2. Move tip of pen into field of view.
3. Keep pen tip in field of view as it moves across the line.
4. Follow same pattern as for reading: left to right, to the left on the same line and down to next line.
5. Writing script is usually easier as it does not require lifting of pen as often. May need to merely draw lines or make loops simulating handwriting until client is able to keep

Task

Optical Aids Used

Non-Optical Aids Used

Training Tips

focal distance, coordinate eyes and hands, etc.

6. With bioptic telemicroscope instruct client to:

a. Locate place where writing will begin through carrier lens.

b. Move pen into position where writing will begin and place tip on page.

c. Locate pen tip through telescope

d. Focus

e. Begin writing keeping pen tip in field of view.

7. For checkwriting instruct client to:

a. Scan check face to locate all entry lines and familiarize self to

<u>Task</u>	<u>Optical Aids Used</u>	<u>Non-Optical Aids Used</u>	<u>Training Tips</u>
<u>Needlework</u>	Microscope in lower powers (especially half-eye & bifocal) chest magnifier, telemicroscope	Self-threading or large eye needles, embroidery thread for crocheting, large size hook, large	positions. b. Place finger to left of each entry line, write in appropriate entry being sure to begin writing at <u>beginning</u> of line to prevent fraud. 8. For writing math problems- helpful for keeping columns straight to use regular or bold line graph paper, or use marker from top to bottom of page. Instruct client to: 1. Prop elbows on high arm chair for stability and maintain focal distance. 2. Initially use largest needles

TaskOptical Aids Used

(difficult in higher powers or bioptic)

Non-Optical Aids Used

needles for knitting,
embroidery hoop on
stand to position
closer

Training Tips

use thread color contrasting to material for practice.

3. Throw towel of contrasting solid color to thread or yarn over lap to provide good background contrast.

4. Stick sewing needle in cork for easier threading, easier to find if dropped.

5. Change in depth perception and dept of focus makes needle threading difficult, practice touching needle with thread, make successive approximations until able to judge distance, depth for threading.

<u>Task</u>	<u>Optical Aids Used</u>	<u>Non-Optical Aids Used</u>	<u>Training Tips</u>
<u>Card Playing</u>	For cards in hand: Chest magnifier, microscopes in lower powers (especially half-eye and bifocal)	Jumbo and Low Vision playing cards	6. Practice stitches by making them large, decrease size gradually until preferred size achieved. 1. To see cards on table with bioptic telemicroscope a. Locate cards using carrier lens. b. Drop into telescope with appropriate cap, get focal distance. c. Scan to see all cards on table. May take practice to remember all cards seen.
		<u>Other Helpful Non Optical Aids:</u> Large print phone dials Velcro straps to prevent spectacles from slipping down on nose Large print or other labels for organization of kitchen	

VI. TRAINING WITH THE CLOSED CIRCUIT TELEVISION
SYSTEM FOR READING/Writing

Task

Familiarization with advantages/disadvantages
characteristics, of various
closed circuit television
systems

Technique for Training

- a. If possible, provide client with access to several closed circuit television units (example, Visualtek's RS series, Miniviewer and Commuter) to compare

1. size of screen (field of view)
2. magnification
3. portability
4. expense (if this is a consideration)

If access to TV systems is impossible, describe systems, show pictures if possible so that client gains knowledge of availability.

Contact local CCTV representative for a demonstration

Task

Demonstration, familiar-
ization with controls of
closed circuit television
system

Technique for Training

Instructor will demonstrate & have client operate:

1. on-off switch
2. reverse polarity
3. magnification control
4. focus mechanism
5. aperture control
6. contrast
7. brightness
8. other controls inherent to the set used
(i.e. electronic line marker, split screen)
- a. After demonstrating, have client demonstrate understanding by naming and operating each control.
- b. Instructor should demonstrate, and have client operate controls which are dependent upon each other i.e. after changing magnification must reset focus, after polarity must adjust contrast and brightness.

Task

Determination of magnification needs of client

Technique for Training

- a. Instructor should use recognizable print or symbols.
- b. Zoom to very large, have client move as close to the screen as she/he likes to name the symbols.
- c. Slowly decrease size, instruct client to verbalize when she/he is no longer able to discriminate the print.
- d. Instructor should increase print size slightly, until the client is able to recognize the printed symbols with consistency.
- e. The client's preferred magnification is calculated by the formula:

$$X \cdot Y = \text{magnification}$$

TV print size cm	=	X
actual print size cm	=	Y
40cm		
working distance cm		

Note: as perceptual skills increase the client's magnification needs may decrease

Task

Use of the X - Y platform
(the moveable table under
the camera onto which the
target material is placed)

Technique for Training

1. Instructor should demonstrate the features of the X - Y platform, its movement, margin stops, friction brake, etc.
2. Demonstrate movements on screen using printed symbols.
3. With instructor's hands over client's she/he demonstrates that left movement brings right side of page into view and vice versa, "away" movement brings bottom of page into view and vice versa.
4. Instruct client to keep print in middle of platform and hands on edges to avoid moving page.
5. A plexiglass sheet may be placed over material to keep it flat and smooth.
6. For books which curve near binding and change focal distance, slip a thinner book under the thin side to heighten it to level of other side.

Task

Fixation

Technique for Training

1. Client may use head or body movement for eccentric viewing if necessary with CCTV, instruct client to keep consistent fixation, do not shift constantly.
2. If possible, binoculararity may be achieved with the CCTV if the acuities are equal, the fields of view allow and there is no muscle imbalance or suppression.
3. May help to patch part of screen to show one line or one letter for client who has difficulty (may use electronic line marker or construction paper).
4. The instructor may also experiment with pinhole patch as explained in near training sequence.
5. If fields of view in two eyes conflict, causing double vision or constant shift from one eye to the other, the instructor should patch one eye.

Task

Localization Scanning

Technique for Training

1. Instructor initially manipulates platform for positioning of symbols on screen, client identifies.
2. Instructor moves platform in appropriate scanning sequence, client scans information as it moves across screen, lines of shapes, letters, symbols, words.
3. Client begins to control platform with instructor's hands over his/hers, simple scanning left to right, top to bottom. Client learns to locate first line by scanning to left of page and up to beginning line.
4. Client able to scan simple formats without guidance of instructor.
5. Client scans and reads paragraphs noting indentation and develops ability to use contextual clues and visual closure.
6. Instructor demonstrates part/whole relationship of newspapers, forms, bills, statements, diagrams,

TaskLocalizationScanningTechnique for Training

charts, schedules, etc. setting magnification for as much field of view as possible then zooming into specific areas for detail.

7. Part to whole relationship is mastered by client and used for other materials to recognize format such as poetry, forms, graphs.
8. Client demonstrates a systematic scanning pattern for finding and reviewing information in a variety of formats.
9. Instructor demonstrates "skimming" skills for locating a specific section in a book, scanning headlines, telephone and dictionary use, etc. client demonstrates these skills.
10. For long sessions of reading, may help for the client to increase magnification slightly during practice to prevent fatigue.

Task

Lighting/Contrast

Technique for Training

1. Some clients can avoid fatigue by switching from white on black to black on white print when reading.
2. Room in which client is reading should have some background lighting to avoid eye fatigue, however, check to make sure room lights are not causing a glare on the CCTV screen.
3. Some clients are bothered by glare from CCTV light the instructor should make a dark construction paper "shield" for light. Keep high enough to slip reading material onto platform.

Writing

Instructor demonstrates by standing behind or beside client and placing instructor's hands over clients:

- a. Position area where writing is to begin onto screen by moving under camera, use heat from light as a clue to placement.
- b. Move pen tip into field of view.
- c. Place pen tip on page, begin writing keeping pen tip in the field of view.

Task

Writing(cont.)

Technique for Training

- d. May be helpful to make straight and curvy lines until techniques are familiar, then writing.
- e. May help to use bold line paper, felt tip pens.
- f. Writing is maintained in same left to right, top to bottom sequence as reading.
- g. Client demonstrates mastery of above techniques.
- h. After continuous writing is mastered client may attempt:
 - 1. Marking appropriate areas in a form.
 - 2. Signing, filling in checks.
 - 3. Filling out forms requiring short answer.
 - 4. Note taking.
 - 5. Math problems (graph paper helpful for columns).
 - 6. Checkbook register, ledger sheets.

CCTV MISCELLANEOUS COMMENTS:

1. CCTV training is begun using least amount of detail, greatest contrast, most comfortable print and magnification level, simplest format, most orientation clues and slow speed. Gradually these variables are changed with a variety of materials depending on the client's needs.
2. Other attachments for the CCTV are available such as typing attachment, CRT terminal attachment etc. Ask for a demonstration by the CCTV representative.
3. The CCTV is an excellent reading training device for clients who have difficulties with fixation or whose lowered acuities make initial use of optical aids difficult. Fixation, scanning and perceptual skills for reading can be taught on the CCTV, then transferred to an optical aid of similar power.
4. The CCTV gives the greatest magnification and field of view of any low vision aid for reading. For clients who must do copious amounts of reading for vocational or educational reasons it may be used to supplement other optical aids for the greatest ease and speed in reading.
5. The CCTV may be used for a variety of tasks other than reading and writing around the home, shop or office; one enterprising CCTV user even employs it for dissecting in college biology!

VII. INSTRUCTIONS TO THE CLIENT FOR HOME PRACTICE

Regardless of how well - prepared the teacher/trainer is, and how well - structured and successful the training sessions are, the true success is shown when the trainee/client uses the aid at home on his own. Much practice and experimentation at home by the client is necessary in every case for the aid to really become useful and comfortable. It is the teacher's responsibility to give the client comprehensive, easy-to-read instructions covering as many contingencies as possible.

Further, the teacher must emphasize his/her availability to communicate about any aspect of the aid(s) and/or training. This would include discussing a possible change in the client's visual status in the future.

The following are a few of the basic elements included in thoughtful instructions for follow-up practice with the aid(s).

1. Name, brand, type, power of each aid.
2. Purpose(s) of the aid -- as well as what the aid cannot do. This should include separate, specific instructions for each component of multi-function aids, such as telemicroscopes.
3. Suggested length and timing of practice sessions (e.g., "10 minutes, 4 X daily, interspersed with distance tasks").

4. Any specific safety cautions (e.g., "don't stand up or walk while wearing your microscope") -- and explain why.
5. List special materials, non-optical aids, hand printed or typed exercises to be used for practice. Materials should be provided or loaned, or the client should be told specifically how to order them.
6. Indicate suggestions for optimum illumination.
7. Instructions for best posture and relaxation during practice.
Instructions for care and cleaning of aid(s).
9. Special instructions if appropriate, for family members who will be helping trainee during practice sessions.
10. Indicate phone number(s) and address where teacher/trainer can always be reached for questions and further assistance of any kind.

Note: All instructions should be put into the format best understood by the client (e.g., tape, type, hand printed letters, large print). The more carefully and thoroughly the at-home instructions are prepared, the higher the chance of successful aid-use.

TRAINING WITH HAND-HELD DISTANCE OPTICAL AIDS

by

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TRAINING WITH HAND HELD DISTANCE OPTICAL AIDS

Introduction

The majority of adults in this country have, at some time in their life, had the opportunity to look through binoculars. Common uses are for sporting events, theater, hunting and bird watching. Even as children, we engage in activities which simulate using a telescope. For example, looking through a paper towel roll or kaleidoscope requires many of the same ocular-motor skills needed to function with a monocular device. Telescopic devices of all sizes and magnifications abound in camera and sporting goods stores.

Because of the general public's level of awareness and prior experience with these devices, the "training" of hand held telescopes often centers around a general orientation to the telescope, its structure and focusing mechanism, as well as basic tips on localization, scanning and tracking. This accompanies a clarification as to potential uses and observation of the trainee utilizing the device in various indoor and outdoor settings. The role of the rehabilitation worker in guiding this initial training is important if the trainee is to achieve optimum use of the telescopic aid. Without our interaction, trainees who require limited instruction could experience frustration and discontinue utilizing the aid, or, at

the very least, not achieve optimum aid use. Instructing the trainee who cannot view through a telescope, hold it properly, maintain balance, scan efficiently, etc., is the challenge of our professions, requiring expertise and creativity to assist each trainee in identifying and remediating aid-use problems.

This paper will briefly review the steps in a typical telescopic aid training program. The major emphasis will be placed on common problems, how to identify them, and most importantly, suggestions for their remediation. Specific methodologies will be provided for assisting the trainee in working through aid use problems.

Functioning with the telescope is emphasized. If the trainee has mobility problems, an orientation and mobility evaluation and program of instruction may need to be completed prior to and/or in conjunction with the aid training. For additional lesson plans and lesson sequencing, I have enclosed a bibliography which reflects the state of the art for incorporating telescopes into a mobility training program.

I. TRAINING PROCEDURES - INDOORS

1. Functional Discussion of Clinical Acuities

Many trainees do not know, in functional terms, what their visual acuity with or without the telescope is. It is helpful to explain the visual acuity measurements (i.e. 20/200 without telescope, 20/40 with telescope) so the trainee not only understands the number designations but begins to realize the improvement of visual acuity when viewing through the telescope.

2. Functional Discussion of Visual Fields

Discussion and examination of the visual field chart establishes a conceptual framework to be used in later training (i.e. central scotoma, eccentric viewing). This discussion gives the trainee an opportunity to verbalize problems which may be caused by the field loss, such as central scotomas which the trainee reports as the jumping or loss of images.

3. Discussion of Potential Uses of Telescope

Discussion of the aids potential use in the trainees lifestyle permits the instructor to assist the trainee in establishing realistic goals and objectives. If the goals are not realistic, help the trainee understand why the goals are not realistic. Stress that the aid cannot be used for depth judgements, general visual improvement or walking

around. Stress the trainees goals and how the successful use of a telescope will enhance distance vision.

4. Familiarization with the Aid

- Have trainee hold and examine the telescope as you point out the ocular and objective lenses. Identify the ocular lens as the lens to be held to the eye.
- Demonstrate operation of the focusing mechanism.
- Have trainee manipulate the focusing mechanism. Focusing should not be practiced at short distances as the range for viewing may be too close. The main purpose of this activity is to make sure the trainee can manipulate the focusing mechanism.

5. Localization - aligning the eye and telescope so light rays reflected from the object of regard fall on the retina.

- Trainee stands in long hallway or auditorium and faces another individual at 10 - 20 feet.
- Without the telescope, the trainee localizes and describes the target person. This verifies that trainee can localize.
- Instruct trainee to maintain fixation on target person while placing ocular portion of telescope in front of eye. Trainee should then describe target person.

- Compare the visual acuity or sharpness with and without the telescope.
- Localize on various indoor targets such as television, clocks, signs, etc. Compare the visual acuity with and without the telescope.

General Suggestions for Localization:

- The targets should progress from large to small.
 - Emphasize good eye aid alignment and holding skills.
 - Discuss the effects of magnification on sharpness of image and reduction of visual field.
 - Using family members as targets can be very motivating for the trainee.
 - The initial experiences should be as positive as possible. Key into original goals and discuss or demonstrate how the development of these skills will assist in reaching the goals.
 - Select an initial training environment that has good figure-ground. Move from well contrasted targets to poorly contrasted targets.
6. Focusing - bending of light rays to converge at one point on the retina by accommodation, or changing of the distances between the ocular and objective lenses of a telescope.
- Review mechanics of focusing mechanism.

- While viewing through telescope at target, instruct trainee to turn focusing mechanism to both extremes (clockwise, counter-clockwise), then back to area of best focus. Using this method, the trainee can experience the entire range of focusing possibilities and can more accurately assess the best focus.
- Have trainee focus on different targets of varying size and at different distance.
- Occasionally manipulate telescope out of focus so trainee has to put it back into focus.

General Suggestions for Focusing:

- If trainee is having difficulty determining the best focus, the instructor can focus for the trainee. This assumes the trainee and instructor either have no refractive error or are both wearing best conventional correction.
- Stress slow movement to obtain best focus.
- Assure best focus by having trainee adjust focusing mechanism past the area of best focus, into blur then back to areas of best focus.
- Traditional telescopes can focus from approximately 6 - 8 feet to infinity. Anything closer than 6 feet may not be in clear focus. A new telescope (short focus telescope) is currently available which can be focused as close as 12 - 24 inches.

7. Scanning - eye movements in a searching pattern in an effort to locate an object of regard.

- Describe need for scanning and problems encountered if trainee is non-systematic or scans too fast.
- Begin by scanning a chalkboard with different shapes or numbers.
- Instruct trainee to localize one corner of the chalkboard then scan horizontally or vertically in a grid pattern.
- Verify accurate scanning patterns by having trainee verbalize the location of shapes or numbers on the chalkboard.
- Scan a relatively uncluttered wall. Begin at corner of wall and ceiling or wall and floor. Systematically scan to other end of wall. Verbalize each object as it appears.
- Move to walls with more objects.
- Continue verbalizing objects as they appear.
- Have trainee scan an entire room.
- Instructor names a specific target and trainee scans to locate target.
- Emphasize speed and approach.

General Suggestions for Scanning:

- The instructor must check the scanning technique, identify weaknesses and provide remedial instruction as the lesson progresses.

- Continually reinforce systematic approach, pointing out trainee successes as often as possible.

8. Tracking - visually following a moving object of regard
 - Explain eye-hand coordination and the need for synchronous movements to maintain localization (refer to tracking difficulties caused by poor eye/aid/object alignment).
 - Emphasize slow movement to decrease effects of speed smear.
 - Trainee localizes on instructor at a distance of 10 - 20 feet.
 - Instructor tells trainee direction of his/her movement, i.e. "I'll be moving to your left".
 - Observe alignment to insure full field of view.
 - Instructor indicates each time direction is changed.
 - Instructor then changes direction without telling trainee.
 - Trainee verbalizes instructor's changing direction.
 - Gradually increase speed, and change directions in an unpatterned fashion.
 - Use other targets. Trainee is instructed to verbalize what the target person is doing, and in what direction the person is moving.
 - Trainee localizes and tracks a target that is already moving. This is a more difficult skill which requires practice with slow to increasingly faster targets.

II. TRAINING PROCEDURES - OUTDOORS

These four skills should be practiced indoors until the trainee is proficient in utilizing the aid. Early intervention in identifying and working through problems in the indoor environment will increase satisfaction and reduce frustration when moving outdoors.

Two factors of major concern when introducing outdoor activities are illumination/glare and figure-ground/contrast. A thorough discussion of the trainee's outdoor lighting preference should be done prior to working outdoors. It may be necessary to discuss and experiment positioning in relationship to the sun, as well as to evaluate the use of absorptive sunlenses or hats and visors, prior to using the telescope outdoors. When beginning training outdoors, select a quiet environment with few moving objects. Targets should be large with good contrast. The environment should progress from simple areas, with few moving objects, to more complex areas, with a variety of moving objects.

I would encourage you not to just follow a rote or cookbook approach to outdoor training. Re-examine the trainee's goals and plan each lesson with the long-range goals in mind. For example, an elderly lady may be interested specifically in watching television and viewing friends from across the room, taking this lady outside to look at store fronts, traffic lights and house numbers is not benefitting the trainee.

Taking a rural person, whose goal is to locate animals on the farm, into a downtown business district for extensive training is also inappropriate in terms of the trainee's needs. The instructor must select appropriate tasks to meet the trainee's goals, then "plug" these tasks into the training sequence, instead of "plugging" the trainee into a previously set training program.

The same basic skills of localization, focusing, scanning and tracking, need to be reviewed as each outdoor setting is introduced.

1. Localization

- Initially, reinforce localizing the target without the aid. Some trainees won't be able to do this because of reduced visual acuity.
- Targets should progress from large to small. For example, cars, mail boxes, fire plugs, street lights, street signs and house numbers.

2. Focusing

- The indoor procedure for focusing can be used outdoors.
- Focusing is not as crucial for gross targets (house) as for smaller targets (bus numbers, street signs). As trainee increases distance from targets, and targets become smaller, accurate focusing becomes more critical.

3. Scanning

- Review and reinforce slow and systematic scanning.
Discuss the selection of a point of reference and the factors related to vertical or horizontal grid patterns, (i.e. vertical pattern for targets with a horizontal orientation).
- To locate street signs, stress horizontal scanning at eye level, then once pole has been located, vertical scanning to locate desired sign, light, etc. If pole is not located in this manner, then scan curb areas horizontally to locate base of pole.

4. Tracking

- Begin with tracking slow moving targets. Pedestrains make excellent targets. As skills develop, begin tracking moving vehicles. Begin with cars at a distance traveling perpendicular to the trainee's position. Vary distances, speeds and eventually track cars traveling on the parallel street.
- Have trainee verbalize the direction of vehicular traffic. Track cars as they are turning at intersections.
- Discuss perceptions of speed. What happens as cars move closer to trainee?

- When tracking buses stand 10 feet past the bus stop.
As the bus approaches localize and track the bus front. Standing past the bus stop enables the trainee to better scan and focus the route number once the bus has stopped. Prior to terminating the lesson, stress the importance of remaining stationary while viewing through the telescope. Re-emphasize not making critical distance or depth judgements based on information gathered through the telescope.
- As the trainee is exposed to the 4 basic skills of localizing, focusing, scanning, and tracking, a number of aid use problems may occur which can inhibit progress. In the next section, specific problems are listed followed by methods of identification and remediation.

TRAINING WITH HAND-HELD

DISTANCE OPTICAL AIDS

SECTION II:

PROBLEM - SOLVING

LOCALIZATION

- Problem 1: localization difficulty caused by central scotoma, multiple scotomas or severely constricted field.
- Identification: a. Ocular pathology
 b. Analysis of visual fields
 c. Trainee's description of field loss
 d. Instructor's observations
 e. Inconsistent clinical vs functional data
- Remedial Steps: a. Functional explanation of pathology
 b. Functional explanation and demonstration of visual field
 c. Eccentric viewing training
 d. Patching technique

IDENTIFICATION:

Ocular Pathology - the general characteristics of the trainee's eye condition will often allow the instructor to anticipate visual field losses. For example, macular degeneration, optic neuritis, and optic atrophy are pathologies which indicate central and/or multiple scotomas.

Analysis of Visual Fields - amsler grid and tangent screen field tests will indicate, if charted accurately, the approximate location and diameter of central field losses. Arc perimeter will indicate peripheral field losses.

Trainee's Description of Field Loss - does trainee verbalize the need to look around objects or not being able to look straight ahead? Is there a particular head or eye position which helps achieve the best area of vision?

Instructor's Observation - does the trainee assume an unusual head or eye position to view through the telescope? (i.e. a head turn to the right to view around a central scotoma). By looking at the trainee's eye through the objective lens, determine if the pupil appears to be centered. If the trainee is not photophobic, shine a penlight into the field of the telescope, observing where the light reflects on the surface of the eye.

Inconsistent Clinical vs Functional Data - if the doctor is unable to improve distance visual acuity with telescopes as much as anticipated, the trainee may be experiencing difficulty viewing around a scotoma. For example, if the trainee's best corrected distance visual acuity is 10/200, with a 6X telescope, the anticipated visual acuity would be 10/30 - 10/40. If the actual measured visual acuity is 10/120/ the trainee may be maintaining fixation in a scotoma.

REMEDIAL STEPS:

Functional Explanation of Pathology - a description of the basic characteristics of the eye condition may heighten the trainee's awareness of the problems being encountered and establish a working knowledge from which further training can progress.

Functional Explanation and Demonstration of Visual Field -

show and explain the visual field charts to the trainee. The goal is to help the trainee achieve a theoretical understanding of the field loss. Next, do a functional field test using your face (nose as a target, sitting approximately 1 meter from the trainee, instruct trainee to change eye position and/or head position to make your nose appear then disappear into the scotoma.

Eccentric Viewing Training - continue the above procedure until the trainee finds the eye/head position where the face (nose) appears to be the clearest. Encourage the trainee to practice finding this position while viewing different objects at varying distances. When the telescope is introduced, encourage the trainee to assume the same eye/head position to obtain the best visual acuity.

Patching Technique - If the trainee has difficulty locating or maintaining the area of best visual acuity, a 2mm aperture in a patch may serve as an initial aid in localizing best area of vision. Occlude the eye not being used. Have the trainee hold the pinhole patch over the eye with the best visual acuity. Instruct the trainee to move the patch in all areas of the visual field to locate the area of best vision. Practice finding this area using different targets at varying distances. Introduce the telescope as soon as the trainee can consistently locate

the area of best vision. Gradually increase the size of the opening until the trainee can accurately locate and maintain the area of best vision without the aid of a patch.

Special Considerations: refer to overall special considerations, numbers 1,3,4,5,7, at the end of this chapter.

- Problem 2: Localization difficulties caused by improper eye-aid-object alignment.
- Identification: a. Position of telescope in relationship to eye
 b. Positioning of telescope in relationship to object
- Remediation: a. Development of kinesthetic awareness
 b. Penlight activities
 c. Lower power telescope
 d. Combining activities
-

IDENTIFICATION:

Positioning of Telescope in Relationship to Eye/Object - sometimes a trainee may demonstrate gross misalignment of the telescope by holding the aid in unusual positions. Observe to determine if the telescope is being held against the bony orbit, cheekbone or nose, perpendicular to the eye. Check to see if the telescope is properly aligned in front of the eye and the eye is aligned into the tube length of the aid. This can be accomplished by shining a penlight into the telescope and observing where the light shines on the eye. Good alignment is attained when the light reflects in the center of the pupil. If the trainee is photophobic, the use of a penlight may be uncomfortable. An alternate method is to have the trainee attempt to localize on a television and observe where the reflection falls on the front of the eye. Frequently check the trainee's eye position for any random **eye** movement in and out of the telescope which may occur when the trainee is attempting to localize the object of regard.

REMEDIAL STEPS:

Development of Kinesthetic Awareness - some trainees have very poor kinesthetic awareness and need to be physically patterned to obtain consistently good alignment. This is accomplished by providing the trainee with a good base of support such as a table. With the trainee's elbows on the table, assist with placement of the ocular portion of the telescope over the eye. Repeat this activity until the trainee can independently place the telescope in a position of good alignment. If the trainee has difficulty completing this task independently, the use of a spectacle-mounted telescope may facilitate the remediation of this problem.

Penlight Activities - have trainee hold the telescope to the eye and shine a penlight or flashlight in the telescope's field of view. Instruct the trainee to respond when the light is seen through the telescope. Check to see that the light is reflected in the center of the pupil to assure a full field of view. As the trainee becomes proficient with this task, try high contrast objects at a distance of 10 feet. As additional environmental targets are introduced, 3 variables should be considered.

1. Size - begin with larger objects, sequence to smaller objects.

2. Distance - begin at close distance (10 ft.) gradually increase the distance.

as far as possible.

3. Contrast - begin with high contrast targets,
conclude the training with low contrast
targets.

Appropriate sequencing of these 3 critical factors is essential for the development of quality telescopic aid skills.

Lower Power Telescope - when initial training with a high power telescope is unsuccessful, the use of a full diameter telescope (i.e. 2.2X Designs for Vision) or low power monocular (i.e. 2.5X Selsi) will make eye-aid-object alignment easier to accomplish. These telescopes have a short tube length and large field of view, which allows for greater variability in alignment, while providing a successful and motivating experience. As the trainee's alignment skills develop, more powerful telescopes can be gradually introduced. As the power of the telescope increases the trainee's skills may regress. Selection of targets (i.e. good contrast, simple figure-ground) and environment (i.e. best illumination, uncluttered indoor area) should begin again from simple to complex, as each new telescope is introduced.

Combining Activities - should none of the above methods work independently, try combining them. For example, introduce proper holding techniques using a low power telescope. Select a target of high contrast and work at close range.

Special Considerations:

1. For a discussion of target selection refer to overall considerations, number 1, at the end of this chapter.
2. Also refer to numbers 2,3,4,5,6,7.

- Problem 3: Localization difficulties caused by nystagmus.
- Identification: a. Ocular pathology
- b. Instructor's observations of eye with and without telescope.
- c. Difficulty maintaining fixation.
- Remedial Steps: a. Explanation and identification of null point.
- b. Trainee's subjective description of how to slow down or still nystagmoid movement.
- c. Near, intermediate, distance practice activities.
-

IDENTIFICATION:

Ocular Pathology - nystagmus is typically associated with congenital pathologies which cause reduced visual acuity. For example, albinism, congenital cataracts and retrolental fibroplasia (RFL) are pathologies where nystagmus is present.

Instructor's Observation of Eye with and Without Telescope - the instructor should observe the trainee's nystagmus without the telescope to determine the amplitude of the eye movement. As the training progresses, the instructor should stand to the side, observing the trainees nystagmus, noting any change in speed or amplitude. At times, the nystagmus may become more pronounced with the introduction of a telescope.

Difficulty Maintaining Fixation - during the localization phase of training, the trainee may indicate problems such as the target jumping, occasionally haziness and blurring of the target or difficulty maintaining extended fixation. These problems may be more pronounced as the power of the telescope increase.

REMEDIAL STEPS:

Explanation and Identification of Null Point - explain to trainee that the null point is an area of fixed gaze in which the trainee's eye movements will perceptibly slow down or stop. By finding this area of gaze, localization through a telescope may be more consistent. To find the null point, have the trainee stare at a penlight or object held 20 feet in front of his/her face. The instructor slowly moves the penlight in all areas of the trainee's field of view as the trainee follows the penlight with eye movements only (head is still). Observe the trainee's nystagmus to locate the null point or area of slowest eye movement. This area is usually found in the temporal gaze, however, all areas of the visual field should be evaluated. Using the same activity, encourage the trainee to use a combination of head and eye movements to find the null point. Evaluate and discuss each method as some individuals prefer to use extreme head movement rather than eye movement alone.

Trainee's Subjective Description of How To Slow Down or Still Nystagmoid Movement - some trainees realize that an improved visual acuity is obtained when the null point is used and have successfully located and utilized the null point for short term tasks. Encourage the trainee to describe and demonstrate the use of the null point for various tasks.

Near, Intermediate, Distance Practice Activities - continue practice locating the null point at near and intermediate activities until the trainee can accurately locate the null point. Introduce the telescope with the target at 10 feet. Discuss the importance of localizing the target with the null point prior to aligning the telescope in the field of view. Provide verbal feedback regarding the positions of the eye and telescope.

Special Considerations:

1. While many low vision people have nystagmoid movements, it has been this instructor's experience that few trainees have difficulty localizing due to nystagmus. This procedure should be used only when nystagmus is causing the localization problem.

2. When attempting to locate the null point, some trainees benefit from supporting chin with elbow and resting elbow on a table. This supports the head and eliminates random head movements.

4. When a telescope is introduced, the trainee may experience initial difficulties locating the null point and manipulating the telescope into the correct viewing position. If this occurs, review remedial step "a" while localizing through the telescope.

5. For sequencing of targets and figure-ground, refer to overall special considerations, number 1,3,4,5, at the end of this chapter.

Problem 4:	Localization difficulties caused by inadequate motor control.
Identification:	a. Physical conditions which lead to motor difficulties.
Remedial Steps:	a. Stationary objects for stability and support. b. Non-optical modifications. c. Spectacle-mounted telescopes.

IDENTIFICATION:

Physical Conditions Which Lead to Motor Difficulties - frequently trainees with cerebral palsy, multiple sclerosis, diabetes or stroke victims, often have difficulty manipulating a telescope. The very young, who may have not developed motor control, or the elderly, who may experience loss of motor control exhibit motoric difficulties, familiarization with the trainee's physical history and observations of the trainee's body control and finger manipulation, with and without a telescope, will assist in identifying the exact problem.

REMEDIAL STEPS:

Stationary Objects for Stability and Support - if the trainee is unable to stabilize the arms or body long enough to localize or is not strong enough to hold the arms in the correct position, some type of support is recommended. For example, the use of a wall, lamppost, table or mailbox may assist with stabilizing the aid and supporting the arm.

Non-optical Modifications - making the telescope physically larger or smaller can aid the trainee with poor motor control. Wrapping the telescope housing with tape or cloth may ease any stress on the hand muscles. If the telescope is too large or heavy, the **selection of a smaller aid with the same magnification** may help. It is helpful to attach a strap to the telescope and belt buckle, so that when the telescope is placed to the eye a resistance or tension is created, this can minimize the effects of tremors. Mounting the telescope on a camera tripod can be effective for long term viewing activities such as television or sporting events.

Spectacle-Mounted Telescopes - when a trainee has extremely poor motor control, the use of a 2.8X Selsi sports glass is recommended. This headbourne unit has low magnification, a large field of view, requires little or no adjustment of body or head posture and is light weight. The unit can be worn for long periods of time with minimal effort, making it ideal for training sessions and long term viewing activities (i.e. television, theater).

Special Considerations:

1. Most trainees function best with a lesson structure which utilizes an approach of short viewing tasks and long rest periods. By spacing the actual use of the telescope with other activities or discussions, trainee fatigue and frustration can be minimized.

2. Progress may be slow. When possible use activities and targets which are motivating for the trainee. For example, when television is mentioned as an interest, use the television for localization and focusing activities. If the trainee is accompanied by family members or friends, these people can serve as targets. The trainee can localize and focus on each person's face, scan for a particular person, then track the person moving across the room.

3. Frequent comparisons of viewing with and without the telescope may also motivate the trainee and increase the awareness of how much improvement in visual acuity is gained with the telescope.

4. Also refer to overall special considerations, numbers 1,3,4,5,7. at the end of this chapter.

FOCUSING

- Problem: Difficulty focusing caused by poor pincer grasp
- Identification: a. Instructor's observations
- Remedial Steps: a. Special adaptations
b. Fixed focus telescopes
c. Referral to an occupational or physical therapist
-

Instructor Observations - the identification of this problem is the same as the identification for "localization difficulties cause by poor motor control". Trainees with a severe physical impairment may have difficulty manipulating (grasping, the turning) the focusing mechanism.

REMEDIAL STEPS:

Special Adaptations - changing the size of the focusing mechanism may ease the difficulty caused by using a telescope with a small focusing mechanism. This can be accomplished with tape or other adhesive. Another alternative is to attach a small post perpendicular to the focusing dial. This enables the trainee to push or pull the post with any portion of the hand. Using this device eliminates the need for a pincer grasp.

Fixed Focus Telescope - if the trainee cannot accomplish the physical skills necessary to focus a telescope, the use of a fixed focus telescope should be considered. The fixed focus telescope has a built in depth of focus which allows the

trainee, through accommodation, to focus from infinity to an intermediate range of 6 - 10 feet. The trainee must wear the best conventional correction when using this telescope to achieve best focus.

Referral to an Occupational or Physical Therapist - in the event that none of the previously mentioned adaptations meets the trainees needs, the development of improved motor skills will be necessary for the trainee to successfully focus a telescope. The occupational therapist can identify the exact nature of the problem and sequence a program of instruction to improve the trainees motor control.

SCANNING

- Problem: Scanning difficulties due to lack of systematic approach.
- Identification: a. Instructor's observations
- Remedial Steps: a. Describe systematic scanning patterns
b. Chalkboard activities
c. Use of high contrast areas
d. Outdoor activities
-

IDENTIFICATION:

Instructor's Observations - when trainee attempts to scan for the object of regard, a quick, choppy, or random movement is observed. The trainee may verbalize objects viewed from scattered portions of the target area. The trainee's verbal description can also provide an assessment of the scanning technique.

REMEDIAL STEPS:

Describe Systematic Scanning Patterns - report the above mentioned observations to the trainee, explain the importance of being systematic if aid is to be used efficiently. Describe the approach as selecting a point of reference (i.e. corner where wall and floor meet) then tracking in either vertical or horizontal fashion in a grid pattern. No area should be covered twice. Discuss the advantages (i.e. greater efficiency, less frustration, etc.) of using this system emphasizing that less time will be needed to find targets once this approach is mastered.

Chalkboard Activities - with trainee seated 20 feet from chalkboard, place various numbers, letters, words, etc. on the chalkboard, encourage trainee to locate a corner of the board, then using the scanning method discussed, scan the board and verbalize the number and letter sequence. As the trainee's proficiency increases, place fewer symbols on the board and evaluate if the trainee can continue to maintain accurate scanning.

Use of High-contrast Areas - select objects on a background wall with good figure-ground and a well defined perimeter. Have trainee locate a corner where the wall and floor meet. As the trainee systematically scans, observe head level telescope movement, encouraging a slow and smooth approach. Trainee should verbalize each object as it appears in the field of view. Move to various walls in the indoor environment, varying the size of the wall, the amount of contrast and the number of targets. Select one target on each wall which the trainee must systematically locate. Observe the trainee's approach and provide feedback.

Outdoor Activities - begin scanning of homes with the trainee verbalizing what appears in the telescope's field of view. Next, move to stationary cars using the same approach. Provide trainee with a specific objective, (i.e. house number, front wheel) and observe to ensure a systematic approach. As proficiency increases, more difficult targets, (i.e. street signs, bus numbers) and more complex environments (i.e. small business, downtown) can be introduced.

TRACKING

- Problem 1: Tracking difficulties caused by central scotoma, multiple scotomas or severely constricted field.
- Identification: a. Ocular pathology
b. Analysis of visual fields
c. Instructor's observations
- Remedial Steps: a. Functional explanation of pathology
b. Review of eccentric viewing techniques
c. Patching technique
-

IDENTIFICATION:

Ocular Pathology - review of the trainee's record, to identify the pathology, will often allow the instructor to anticipate visual field losses, for example, central scotomas are generally associated with macular degeneration; multiple scotomas may be caused by optic neuritis or optic atrophy, and retinitis pigmentosa or advanced glaucoma may indicate severely constricted fields. While these pathologies do not insure the characteristic loss mentioned, the majority of trainees with these pathologies will demonstrate the typical field losses mentioned.

Analysis of Visual Fields - precise field studies will enable the instructor to determine the location and severity of a visual field loss. When analyzing losses of central vision, keep in mind that an exact visual field is difficult to obtain. The visual field testing situation requires accurate and sustained fixations which may be

difficult for the trainee with a central field loss. In most situations the approximate size and shape of a central scotoma is reflected on the field chart.

Instructor's Observations - the instructor may observe an inability to maintain eye/head eccentric viewing position while tracking a moving target. This will appear as random eye movements. The trainee will report intermittent or total loss of target through the telescope.

REMEDIAL STEPS:

Functional Explanation of Pathology - a description of the basic characteristics of the eye condition may increase the trainee's understanding of the problems encountered, and establish a working knowledge from which further training can progress.

Review of Eccentric Viewing Techniques - trainee should verbalize the eye/head position from which a target is most clearly viewed. Trainee demonstrates and practices technique using the same targets from the previously described eccentric viewing training. Review earlier explanation of the technique.

Patching Technique - review earlier complete description of this technique.

As the trainee becomes proficient with localizing the area of best vision, introduce tracking while viewing through the aperture of the patch. Gradually increase the size of the aperture until the trainee is able to independently eccentrically view while tracking a moving object. Next, have the trainee localize through the patch with the small aperture. Have trainee then attempt to localize through telescope. Begin slow tracking activities and gradually increase the size of the aperture. Encourage head movement, not eye movement. By moving only the head, a consistent viewing area is maintained.

Special Considerations:

1. It should be noted that trainees who experience motor problems, while attempting to track, may need remedial steps for attaining adequate motor control. For this procedure refer to "localization difficulties caused by poor motor control". If motor problems cannot be solved, an occupation or physical therapist should be consulted.
2. The trainee with severely constricted fields may need to practice alignment activities as described elsewhere in this paper.

- Problem 2: Tracking difficulties caused by inability to maintain eye/aid/object alignment.
- Identification: a. Trainee's subjective comments
 b. Instructor's observations
- Remedial Steps: a. Tracking without telescope
 b. Tracking with telescope
-

IDENTIFICATION:

Trainee's Subjective Comments - the trainee may report a decreasing field of view or seeing totally black, which is due to looking into the side or housing of the telescope. This problem is caused by a lack of synchronous movement of head/eye telescope resulting in the inability to continue following the moving object. (i.e. movement of telescope may precede movement of head and eye, or head and eye may move too quickly). This causing a loss of localization through the telescope and inability to continue tracking through the telescope.

Instructor's Observations - once good eye/aid/object alignment is obtained, any observed positional change will effect tracking. To adequately observe the trainee, stand to the side of trainee. This position allows monitoring of eye and aid.

REMEDIAL STEPS:

Tracking Without Telescope - trainee should localize a person (family member) standing at a distance of 10 - 25 feet. As the person slowly moves left then right, the trainee is instructed to use head movements only to track. If the trainee continues to use a combination of head/eye movements, introduce the pinhole patching technique to minimize eye movement. As the trainee increases head movement, increase the size of the patch aperture. Continue this activity until the trainee can track a variety of moving targets at varying distances and speeds.

Tracking with Telescope - begin with a low power telescope, as this reduces the perceived speed of the target and provides a large field of view. Gradually increase the magnification of the telescope to the desired power. As each higher power telescope is introduced, skills may regress. Introduce each telescope by tracking large well contrasted targets at a slow speed. As proficiency is demonstrated, smaller, poorer contrasted, targets at varying speeds may be used.

Special Considerations:

1. Initially tell trainee in which direction you will move. This also provides a voice cue for localization.

2. Tracking skills can be difficult to acquire, and re-evaluation are required for the trainee to work through this problem.

3. Outdoor tracking may be aided by changing trainee's position in relationship to the sun. Looking in the direction of the sun may cause a white-out or bleach-out of details. Do not confuse this with poor alignment. Changing the trainee's position will lessen this problem. (i.e. placing back instead of front in the direction of the sun.)

4. When tracking a moving bus, the trainee's position in relationship to the bus stop is critical to reading the route number. When the trainee stands at the route pole, it becomes necessary to read the route number as the bus is moving past the trainee. By standing 10 feet past the route pole, the bus can be localized in front of the trainee, and the trainee can focus as the bus slows and stops.

5. Introduce moving objects outdoors in the following sequence; people then cars moving in the distance, people then cars moving at a close range (20 - 40 feet), then buses from the distance to a stopping point of approximately 10 feet distance.

6. Refer to overall special considerations, numbers 1,4,5,6, at the end of this chapter.

- Problem 3: Difficulty tracking caused by reduced field of high power telescope.
- Identification: a. Trainee's subjective comments
 b. Instructor's observations
- Remedial Steps: a. Tracking without telescope
 b. Tracking with low power telescope
-

IDENTIFICATION:

Trainee's Subjective Comments - the trainee may report inability to follow a moving target. (i.e. the target moves too quickly through the telescopes field.) This is referred to as speed smear. When viewing through a telescope, speed is perceived as being increased in direct proportion to the magnification of the telescope. For example, when viewing through a 6X telescope, the speed of a moving person may appear to be faster than it actually is. In addition, the high power telescopes also have a restricted field of view. The trainee may also report seeing totally black or having an irregular shaped field of view. This is caused by eye movement and can be interpreted as poor eye/aid/object alignment.

Instructor's Observations - any change of eye/aid/object alignment will affect tracking. Observe to determine if the eye or aid is not in synchronous movement. This is best accomplished by standing at trainee's side and viewing eye/aid alignment.

REMEDIAL STEPS:

Tracking Without Telescope - use the same procedures as in tracking without telescope. Refer to earlier "tracking difficulties caused poor eye/aid/object alignment".

Tracking with Lower Power Telescope - using a low power telescope, have trainee localize on a target (family member's face) at 20 feet. Have target person slowly move left then right. Vary the distance and speed. Change lighting conditions, targets, distances and speeds. As the trainee becomes proficient with the various changes, increase the power of the telescope. As each new telescope is introduced, a review of previous targets is necessary to avoid a regression in skills. A regression may be caused by the restricted field and speed smear. Continue with the same activities until the trainee can use the high power telescope.

- Problem 4: Tracking Difficulties Caused by Dizziness
- Identification: a. Trainee's observations
- Remedial Steps: a. Physical contact with environment
 b. Low power telescopes
 c. Figure-ground
-

IDENTIFICATION:

Trainee's Observations - trainee reports experiencing disorientation, nausea, or loss of balance while tracking through telescope.

REMEDIAL STEPS

Physical Contact with Environment - begin tracking activities with trainee seated or leaning against a wall or other solid object. Physical contact with such support systems may lessen the discomforting effects of viewing through telescope. This is especially helpful with the trainee who describes the sensation of the world moving or spinning.

Low Power Telescopes - as previously mentioned in various sections, the high powered telescope provides a perception of increased speed of movement equal to the power of the telescope (speed smear). Using a low power telescope will diminish this effect and may decrease the intensity of the dizziness.

Figure-Ground - select an environment with little or no movement other than the target. The background should be a solid color with as few objects as possible. This will lessen the effects of speed smear. The target person should move slowly in a consistent speed. As the trainee experiences less discomfort move to other environments and increase the power of the telescope.

Special Considerations:

1. The initial outdoor environment should be relatively quiet with minimal traffic volume. Begin with tracking people at 40 - 60 feet, then to slow-moving vehicles and finally to vehicles with varying distances and speeds.

2. Refer to overall special considerations, numbers 1,3,4,5,6, at the end of this chapter.

Problem: Psycho-social factors inhibiting use of telescopic aid.

Psycho-social factors play a major role in the trainees development of skills and use of an aid in everyday life. The following section briefly covers a few areas of particular importance to training with distance optical aids.

A common problem is unrealistic expectations as related to the improvement of distance vision with a telescope. For example, the trainee lists -

1. Seeing better for walking down the street
2. Seeing cars to cross the street
3. General distance vision improvement as expectations for using the aid.

Obviously, these goals are difficult, if not impossible, to attain. Some trainees feel exceedingly uncomfortable being seen using a telescope. Occasionally a geriatric trainee from a nursing home will verbalize feelings of being "too proud" to use a telescope in front of the residents. The trainee may use the aid well in private training sessions but reject it for everyday use in the nursing home.

Lack of motivation to try optical aids may reflect the trainee's attitude towards the visual loss and its associated difficulties. The trainee may verbalize lack

of interest, unwillingness to try and overall disappointment.

These factors may have a profound effect on the approach used to introduce and train with the aid. Early identification of such problems is essential, as factors related to self-concept, motivation, external pressures and expectations are usually not dealt with as easily or quickly as problems dealing with aid technique. These factors, which come from within, cannot be easily changed by external direction and may be the product of years of development. Careful identification and discussion of the problem area should occur prior to, or in conjunction with, the training program. This allows for the development of a positive approach to the aid and, hopefully, assistance with working through the trainee's problems.

OVERALL SPECIAL CONSIDERATIONS

1. Initial targets should be large (i.e. person, television) and gradually diminish in size. As a new telescope or new environment is introduced the target size should again be sequenced from larger to smaller size (i.e. house, car, mailbox, street sign).

2. When a penlight is used in a remedial step always discuss this with the trainee prior to its use. Many conditions (albinism, aniridia, cataracts) evoke photophobia from the trainee. Ask the trainee about light sensitivity. If the use of a penlight is contraindicated, a high contrast target can be used.

3. Some trainees are bothered by the glare of fluorescent lights and/or the sun. Each trainee should describe the preferred lighting conditions and be evaluated with absorptive sunwear when necessary. A discussion of the preferred lighting should be done prior to any training with or without the telescope.

4. Three target variables should be sequenced.

Size - begin with large targets and progress gradually to small targets.

Distance - 10 - 15 feet is the best distance to introduce most activities. As the training

progresses increase, then vary the distance.

Contrast - targets, of high contrast enhance the trainee's ability to localize and track. If the target is a light color (white, yellow) the background should be dark (black, blue). Change the amount of contrast from high to low (green on blue) as the trainee's skills develop.

5. The developmental sequence of the environment is critical to the success or failure of the training program. A simple indoor environment with illumination contrast and plain walls enables the instructor and trainee to concentrate on solving problems associated with aid technique, by eliminating external variables. Gradual introduction to external variables (glare, moving people, "busy" figure-ground) is the instructor's most critical decision. If the complexity of the environment is introduced too rapidly, the trainee may fail. Exposure to the outdoor environment should occur when the trainee is proficient with all skills in the indoor environment. Exposure to an outdoor setting should occur in a relatively quiet area with minimal pedestrian or vehicular traffic. When possible, a background of one color (i.e. building or large field) will enhance initial attempts at localizing.

As the trainee's skills develop, use of the telescope in residential, small business, and downtown environments can be introduced.

6. Training may begin with a low power telescope which has a large field of view and a short tube length. Using a low power telescope introduces the trainee to the effect of using a telescope (restricted field, magnification) without the inherent difficulties of using a high power aid. When using a low power aid, keep in mind that the visual acuity decreases or increases commensurate with the power of the telescope. When selecting targets, make appropriate size and/or distance adjustments to assure the trainee enough resolving capacity. For example, if the trainee attains 20/40 visual acuity with a 6X telescope, using a 2.5X telescope would reduce the visual acuity to approximately 20/100. When selecting targets, make sure the target can be resolved with a visual acuity of 20/100. To assure that a trainee can resolve the selected target you may either move the trainee closer or select a larger target.

7. An aid which is often helpful in remedial training is the Selsi 2.8X sports glass. This is a binocular unit, spectacle mounted with low magnification and an excellent field of view. To eliminate peripheral light and assist

with localization, this aid has side shields which are removable. By using a full field telescope of this type, many secondary problems can be eliminated or minimized for the initial training session. This allows the instructor and trainee to focus on the immediate problem and build success as quickly as possible.

CONCLUSION

In closing, the most important aspects of successful distance optical aid training are sequential exposure to the telescope/environment and early identification and remediation of aid use problems. The major skills to be developed are:

1. Localization
2. Focusing
3. Scanning
4. Tracking

The instructional program should include each skill area. As problems arise, the instructor should be able to identify the cause of the problem and provide the necessary remedial instruction. A major goal should be to solve the problem quickly and in a supportive manner.

While it is important to introduce the techniques in a sequential manner, be aware of each trainee's goals and learning style. Taking all trainees through a rote program of instruction does not allow for individual differences in learning style or exploration of the needs a telescope may fulfill in the trainee's life style. The sequence presented in this paper is best used as guide to be adapted whenever necessary to meet the trainee's needs. Adapting the instructional sequence for each trainee encourages maximum use and satisfaction with the distance aid.

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TRAINING CONSIDERATIONS FOR THE
LOW VISION ELDERLY AND MULTIHANDICAPPED

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TRAINING CONSIDERATIONS FOR THE LOW VISION
ELDERLY AND MULTIHANDICAPPED

Although the elderly and the multihandicapped comprise two special groups, with very special needs, the primary rehabilitation objective is virtually the same for each group: to help the individuals realize their potential for as much independence as possible. This potential can be attained through essentially the same means for members of these special populations as for other rehabilitation clients. The importance of such factors as proper control of illumination, good utilization of contrast, and the use of magnification when appropriate, is basically the same. The difference in working with such groups however, is in determining how such factors can be best adapted and taught to meet each individual's special needs.

According to a 1975 study conducted by the U.S. Department of Health, Education and Welfare, approximately 86% of the population over 65 years of age have at least one chronic condition causing serious limitations. In addition, it was not uncommon to find multiple chronic conditions within this group. The five most prevalent chronic conditions which affect the physical health of older persons were arthritis (38%), hearing impairments (29%), vision impairments (20%), hypertension (20%), and heart conditions (20%).

Almost 18 percent of the non-institutionalized elderly report some limitations of mobility, whereas, less than 1 percent of the 17-44 age group, and less than 5 percent of the 45-64 age group, experience

health related mobility limitations. Females, non-whites, and those in the lowest income categories are reported to be the most limited in terms of mobility. In addition, there are more than 960,000 aged persons in nursing homes, most of whom have some degree of mobility or other functional limitation.

The following is a discussion of the most common chronic conditions affecting the elderly and the multihandicapped, their accompanying characteristics, and the potential difficulties they may impose on training with optical aids in the near, intermediate, and distances areas of activities of daily living.

I. ARTHRITIS

Characteristics:

Pain in joints and general discomfort due to postural changes often greatly hinder such basic mobility activities as standing, sitting or walking at length. Maneuvering steps up and down are often painful and difficult. Activities involving a full range of bodily motion, such as the full range of home managements skills, are often restricted and performed slowly and with difficulty. Tasks requiring fine finger dexterity and manipulation are often restricted.

Potential Difficulties:

1. Attaining and maintaining postural position necessary for reading and other near tasks due to stiffness or pain.
2. Inability or difficulty in grasping and holding items for near tasks.

3. Pain or discomfort performing tasks which require movement of muscles, joints.
4. Holding arm in proper position for holding telescope for extended periods of time.

Postural Support:

1. High back chair with arms, preferably with wheels, if desk top reading stand is used. Consider a free-standing reading stand which can be swung over bed or chair.
2. Propping of any material to be viewed for stability and appropriate distance
3. Start in seated position to focus energies on learning the telescope; later, move to standing position. Note the effect standing has on the use of the telescope.

Contra-Indicated Low Vision Aids:

1. Aids requiring extremely critical focal distance or very controlled posture for use:
 - a) very high magnification microscopes
 - b) very high magnification telemicroscopes
 - c) Particularly small aids (e.g. Keeler or Walkers 3 X-ring telescope).

Special Materials/Adaptations:

1. Any materials making grasping and holding, easier (ex: cork for threading needles)
2. Pipe cleaners or other tactual material on spectacles for determining focal distance.

3. Making telescope larger (wrapping with tape) can make focusing and holding easier. Head borne units can ease stress on upper extremities.

Training Tips:

1. Instruct client to hold head and eye steady and move page when reading.
2. Provide auditory, tactual feedback for maintenance of focal distance.
3. Practice sessions should be short, as client may get stiff from maintaining same position.
4. Initially, demonstrate and practice all techniques while seated, using a desk/table to support elbows. Walk/stand for short periods of time with frequent rest periods.

II. STROKE/CVA

Characteristics:

Possibility of weakness, spasm and partial paralysis. Speech may be absent or slurred. Sensation disturbances; skin may become oversensitive, and slight pressures may feel extreme or painful. Occasionally all sensation is lost. All motions, involving affected limbs are awkward. Simple transfers from bed to chair and to standing position can be extremely difficult. Personal management tasks become studied and difficult. Manipulations such as grasping, squeezing, pinching and rotating with affected limbs can be difficult or impossible.

Potential Difficulties:

1. Inability to attain, maintain position
2. Paralysis contraindicates use of limbs or trunk
3. Speech problems or language difficulties
4. Difficulty manipulating objects for near tasks
5. Easily frustrated
6. If dominant side is affected by partial or total paralysis the holding, manipulating, and focusing actions needed for a telescope will be difficult.

Postural Support:

1. See "Postural Support" for arthritis
2. Consult with physical/occupational therapist for best positioning or for props for best performance
3. To assist with balance, have client use a wall, pole, mail box, etc., for support when viewing through telescope.

Contra-Indicated Low Vision Aids:

1. Possibly hand-held or stand magnifiers, if arm/hand paralysis.
2. Aids requiring maintenance of very precise posture (i.e., high magnification microscopes and telescopes).
3. Hand-held telescopes may be difficult to use, depending on extent of loss of motor control.

Special Materials/Adaptations:

1. May use combination of magnifications, i.e., lower power microscope, and large print.
2. CCTV is often a good choice, along with a postural chair.
3. Fresnel prisms are often very helpful to the hemianoptic client for mobility purposes. Often, a support cane is needed for balance during moving tasks.

Training Tips:

1. Work with speech pathologist to structure program on appropriate language level
2. Limit length of training session; do not allow client to become tired
3. Work with family member who may have best understanding of client's speech patterns, if affected
4. If client has poor motor control, practice of fine motor coordination (with an occupational therapist) may be needed prior to introduction to the use of a telescope.

III. HEART AND CIRCULATORY PROBLEMSCharacteristics:

Mobility is not generally affected, except in areas of distance and speed of gait. Precautions should be taken in encouraging the person in all activities that are not part of his usual daily routine. There are limitations on lifting, stooping, straining, reaching, and bending. Long periods of standing are to be avoided.

Potential Difficulties:

1. Inability to concentrate due to pain or psychological problems.
2. Limited stamina. Need to avoid anxiety or stress provoking situations. May be an inability to travel for extended periods of time to use telescopes in different environmental conditions.

Postural Support:

1. Some clients are most comfortable in very upright position, using a high backed chair for near tasks.
2. Seated activities are recommended for initial telescope training. Outdoors, park benches, bus stop benches, and low stone walls can be used to minimize standing during training.

Contra-Indicated Low Vision Aids:

None, depending on the frustration level of client; may want to avoid sophisticated aids.

Special Materials/Adaptations:

1. Use reading material of high interest level for motivation
2. Low vision aids for hobbies and leisure activities can often aid in overcoming some psycho-social problems.
3. Head-borne telescopes will minimize physical activity.

Training Tips:

1. Consult psychologist, social worker, family, medical doctor, or whomever is appropriate for insight into patient motivation.
2. Short sessions to avoid frustration and fatigue, with frequent breaks, to maintain high success and lowest levels of anxiety.

IV. TREMORSCharacteristics:

Maintaining balance is the primary mobility problem. Fine finger, hand, arm, and foot coordination are affected. Personal management skills are difficult, if not impossible, depending on the severity of the problem. Motions of the affected parts are slow, and require concentration and energy.

Potential Difficulties:

1. Hand movement contraindicates holding material steadily for near tasks.
2. Head movement interrupts fixation, and maintaining of proper focal distance.
3. Unable to perform tasks employing eye-hand coordination.
4. Holding, maintaining alignment, focusing, tracking and scanning may be difficult with the hand-held telescope.

Postural Support:

1. observe client to determine posture in which tremors are

most limited (even if these postures are "out of the ordinary").

2. Have client brace hand/and arm holding an aid on desk/table surface.
3. Head-borne aids may be most successful for near and distance tasks.

Contra-Indicated Low Vision Aids:

1. Hand-held magnifiers
2. Aids with very critical focal distance, unless steadied in a special way.
3. If client has hand tremors, the hand-held aids will be difficult to use. If the client has head tremors, the head-borne units will be difficult to use.

Special Materials/Adaptations:

1. Use stand magnifier instead of a hand-held one
2. Fred Sammons' Be O.K. Self-help Aids Catalogue
3. Provide auditory/tactual feedback for maintaining focal distance, i.e., pipe cleaners
4. Use large print for easier recognition, work into smaller size prints gradually
5. Hand held telescopes mounted in a stand (e.g., a tripod) may be easier to use.

Training Tips:

1. In some cases, tremors lessen if client is relaxed;

suggest deep breathing and investigate relaxation exercises techniques.

2. Check client's medications; if C.P., may have medication to relax muscles. Tranquilizers may reduce tremors. Schedule training sessions at "best" times.
3. Begin work in telescopes with the fullfield units, then if needed work into more powerful smaller field telescopes.

V. DIABETIS

Characteristics:

The number and type of limitations from diabetes are determined by the age of onset, severity of the disease, and the individual response to the prescribed treatment. Mobility limitations vary, especially in the acceptable time span, the proper shoes and their fit, decreased ability to detect surface changes underfoot, and possible overall reduction in sensitivity to surface, temperature, and direction changes. Fine tactual discrimination may be difficult or impossible. The timing of meals or of medications may dictate the timing of any prescribed lessons.

Potential Difficulties:

1. General health problems may cause difficulties and interruptions, as well as require special arrangements for scheduling of training sessions.

2. Fluctuating visions; scattered scotomas causing localization and alignment problems.
3. Possible progressive loss of vision
4. Poor tactual sensation of outer extremities
5. Psycho-social implications

Postural Support:

No special considerations, other than attention to special needs relating to possible neuropathy.

Contra-Indicated Low Vision Aids:

1. Optical: possibly telescopes with small ocular and very restricted field of view.
2. Non-optical: may have difficulty with tactual, non-optical aids such as those with fine notches, raised lines, small dots.

Special Materials/Adaptations:

1. Hand-held (or spectacle mounted) illuminated magnifiers in high powers are often helpful (Keeler).
2. CCTV gives greatest magnification for fluctuations, progressive loss.
3. Adaptable background, task illumination, often helpful to provide for fluctuations in lighting needs.
4. Color code objective (or ocular) lens of a telescope.

Training Tips:

1. Training may be provided on an on-going basis to adapt to fluctuations, progressive losses.

2. Exploration of types of syringes and aids and tips for loading/reading them is often helpful.
3. Practice sessions may be adapted to periods of poor health, insulin shock, insulin reaction, eye hemorrhaging, etc.
4. Client will often need support of organizations, individuals, professionals to provide health care information.
5. The professional should work with the social worker, psychologist, medical doctor, family, or significant other for information and psycho-social implications.
6. Break tasks into small components for attainment with the least frustration.
7. If scattered scotomas exist, training in eccentric viewing activities may be indicated prior to introducing a telescopic aid.

VI. LOSS OF HEARING

Characteristics:

Mobility is hindered primarily due to poor localization ability. Daily living activities are affected by those factors requiring good hearing in order to perform them effectively.

Potential Difficulties:

1. Inability to communicate with training personnel and doctors.
2. Possible difficulty with concept development, if hearing loss is congenital.

3. Difficulty with sensory integration; visual/auditory, and/or other senses.
4. Hearing and vision losses may mask other impairments; physical, mental, emotional.

Postural Support:

None out of the ordinary.

Contra-Indicated Low Vision Aids:

May depend on level of understanding of the client.

Special Materials/Adaptations:

1. Training materials should be geared to the level of understanding of client. Work through an interpreter if necessary, or through family, previous educators or rehabilitation personnel who have worked with client; or client him/herself, depending on client's ability to communicate.

Training Tips:

1. Insure client's understanding by requiring a demonstration or explanation of techniques (through interpreter if necessary).
2. If client must speech-read, do not stand in front of window or other light source; get as close as necessary; enunciate clearly, but do not exaggerate; avoid shouting, and male professionals may care to trim mustache to avoid interference with communication.

3. If on-going training will take place, or if training professional will maintain a hearing impaired caseload, instruction in Total Communication is a must.

VII. LEARNING DISABILITIES

Characteristics:

Often, an inability to concentrate will be observed. Basic learning processes such as intaking, integrating, communicating, may be hampered. The ability to recall or retain recently learned information may be affected.

Potential Difficulties:

1. Inability or confusion in understanding or remembering directions and/or training procedures.
2. Disorientation in directionality
3. Difficulty in making transitions
4. Short attention span
5. Word and/or letter reversals
6. Inability to comprehend what is read
7. Tendency to "guess" or fill in words not recognized in reading
8. Letters not recognized; general difficulty with visual perceptual skills
9. Avoidance of "high frustration" tasks

Postural Support:

None out of the ordinary

Contra-Indicated Low Vision Aids:

Understanding, confusion, or inability to recall, may preclude the use of sophisticated aids.

Special Materials/Adaptations:

1. Type or large print all instructions for home practice
2. Use directional clues for practice materials, such as arrows, and instructions such as, "look toward your right-hand, the one with the ring on it".
3. Practice visual perceptual skills, such as those identified with the Barraga Visual Efficiency Scale.
4. Spacing between print is usually of primary importance for this population. Hand-print materials with a great deal of spacing between words and letters.
5. Use typoscope or marker to cut down on confusion of closer spacing. Gradually phase out the need for the aid.
6. Use high interest, low vocabulary practice materials.

Training Tips:

1. Ascertain onset of learning disability symptoms if possible, as well as the expected duration, and whether due to congenital or adventitious reasons.
2. Consult with teacher for the learning disabled, a language specialist, the attending physician, or the family to set realistic objectives for training--along with client/teacher goal-setting.

3. If problems with word/letter reversals and comprehension persist, look into thorough perceptual/reading evaluation.
4. Set up short practice sessions; break tasks into smallest components to avoid frustration and to insure success.
5. Prevent tendency to guess by requiring that words be spelled or sounded out phonetically before they are called out.
6. Make transitions easier by paying home, school, job, and other appropriate visits to set up the environment; attempt to appoint a liaison person to check on practice, to observe/evaluate the use of the aid in that environment.
7. Use behavior modification techniques. For example: Chart progress in reading with length of words recognized and speed attained--on a graph to show improvement.

VIII. MENTAL RETARDATION

Characteristics:

Mobility performance may show an inability to understand directions, or to remember them. Daily living tasks are often performed in a manner suggesting great difficulty in having grasped the basics of fine finger coordination. Overall impression: few generalities can be made. Problems in all areas are variable and unpredictable.

Potential Difficulties:

1. Slower to understand directions and training procedures.
2. May have difficulty with transitions
3. Attention span may be short
4. May not understand his own limitations.

Postural Support:

None out of the ordinary.

Contra-Indicated Low Vision Aids:

None, as a rule. May depend on the severity of the impairment; inability to understand and retain instructions may preclude the use of sophisticated aids.

Special Materials/Adaptations

1. Materials presented for reading should be on client's level of understanding.
2. Large print or good spacing may be needed.

Training Tips:

1. Work with other interdisciplinary professionals and the client to set realistic objectives.
2. Short sessions; smallest components.
3. Home, school, job or other appropriate visit, to provide transition for use of aids.
4. Use behavior modification techniques

5. As much as possible, give client an opportunity to set, and attempt to fulfill, his own objectives. Will either demonstrate his/her own limitations or, if achievable, will build motivation.

PSYCHO-SOCIAL ASPECTS OF LOW VISION:
CONSIDERATIONS AND INTERVENTIONS

by

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PSYCHO-SOCIAL ASPECTS OF LOW VISION:
CONSIDERATIONS AND INTERVENTIONS

"One major objective of the specialist working with the low vision is to prevent him from being 'caught in the middle' or 'hanging in the fringes' as a Marginal person--neither 'blind' nor 'sighted.'" (The Partially Sighted Person," A Marginal Man, Group #5)

INTRODUCTION

Mehr and Freid (1975) define low vision as reduced central acuity or visual field loss which even with the best optical correction provided by regular lenses still results in visual impairment from a performance standpoint.

Partial sight has been referred to by Adams (1974) as the point at which the patient becomes aware that his poor acuity has affected his performance to the point that he thinks of himself as handicapped; an awareness that cannot be defined numerically. Considering the estimated population of 6.4 million people with a visual impairment, approximately 400,000 have no useful vision. The remaining 6 million partially sighted people in the United States have been relatively unnoticed, one-half of the number being between the ages of twenty-five and sixty-four (Goldfish, 1973). The annual consumer report from the American Printing House for the Blind, Louisville, Kentucky on school age children suggests the number of "Legally" blind people in the United States could number close to one million. However, Graham (1964) estimated that over 90% of the "Legally" blind population had useful vision. In support, Law, as reported by Barraga

(1973) found that over 80% of "blind" infants in his longitudinal study turned out to have useful vision. More recently, Beliveau and Smith presented the statistics in the following manner:

Based on the most recent national reporting statistics from the National Society for the Prevention of Blindness there are an estimated 627,000 legally blind persons in the U.S. Approximately 23% of this population is totally blind, or without usable vision. The remaining 77% are low vision individuals. In addition, information from the most recent U.S. Bureau of the Census, Statistical Abstracts, 1976, indicates that there is an additional potential consumer population that may be as high as 9.5 million non-legally blind visually impaired individuals who could benefit from specialized low vision training (1979).

Any discussion of psycho-social aspects of low vision must acknowledge the formidable task of defining the population. Low vision people are, without question, heterogeneous with regard to degree, type, and amount of remaining vision (a significant and considerable number being considered "legally blind"), age, onset of the condition (congenital versus adventitious), educational status, varying amounts of a variety of service involvements, and varying degrees of adjustment or maladjustment to the condition. Consider, for example, the following statements alluding to the above described difficulties:

A partially sighted person considers himself sighted and functions visually long after he has reached a level that others may consider blindness (Adams, 1974).

The partially sighted seem to have greater difficulty adjusting to their remaining vision than individuals who lose their sight and have no hope of recovering it, or the congenitally blind who have no conception of what it is like to see (Cholden, 1958).

The terms "sighted" and "blind" represent groups possessing well established stereotypes and culturally expected rules of behavior. The position and role of the partial is much less clear owing to the tremendous range of variability in partially sighted types. Generally, society views the partial as sighted and expects him to function as such (Faye, 1970).

Children with partial sight are often misdiagnosed, misunderstood, undereducated, and socially ostracized. They are neither blind nor sighted--society doesn't acknowledge their existence (Jan, Freeman, Scott, 1977).

The low vision person would like to be included in some grouping, needs and seeks an identity, and learns to behave and respond in accordance with the expectations of others. If they expect him to act blind, he may try. If expected to act sighted, he may try. People then think they know how to treat him and he thinks he knows how to behave ("The Partially Sighted Person," A Marginal Man, Group #5).

Accordingly, it is the purpose and intent of this paper not to respond partially to all of the parameters of psychosocial aspects of the low vision population. Rather, the issues of visual deficits, the development of the self concept, adjustment difficulties encountered, and suggested intervention procedures will be discussed with regard to their implications for involved service providers.

VISUAL DEFICITS AND THEIR IMPLICATIONS

The importance of vision and the role it plays in the development of the psyche has been repeatedly recognized by numerous authors. The early bond between mother and child (known as "attachment") is considered necessary for the feeling of security (Adler), transmission of empathy (Sullivan), and the establishment of trust (Erikson). Since ordinarily, adult-like plasticity of convergence and accommodative responses are present in the visual behavior of infants at two months of age (White, 1971), vision must inevitably contribute to attachment. Jackson (1978) and others, accordingly, have stressed the importance of maximizing visual functioning behaviors as early as possible.

With regard to low vision people, it is understood and must be recognized that the effectiveness of vision utilization is dependent on the overall physical and emotional health status of the individual in relationship to environmental factors; e.g., size of print, lighting considerations, contrast, changes in the environment, and figure-ground requirements, to name a few. These variables often result in the low vision person visualizing certain sights at times but not consistently. Unfortunately, it is frequently assumed by parents and involved service providers that the low vision person "can see" ("if not once, why not all the time?"). Performance difficulties are then attributed to inattention, lack of ability, or poor coordination.

Moreover, apparent contradictions (not seeing the blackboard or reading signs, yet being able to run or ride a bicycle - behaviors to be expected for those with a central field loss), often are deceiving to the public (Jan, Freeman, and Scott, 1977). It is difficult, as well, to understand why a person can "see" an object across the room, yet fall over a foot stool (a severe peripheral field loss). Low vision persons with fluctuating acuity may miss visual nuances on certain occasions yet have no difficulty at other times. Lastly, these people may find it necessary to develop and utilize behavioral compensations for their visual difficulties; e.g., squinting, tilting the head, performing slowly and compulsively, being orderly, subcovalizing, and using their finger to keep their place on a printed page. Whereas those behaviors are "normal", necessary, and must be allowed, they are often misunderstood and discouraged.

It is felt appropriate at this time to discuss briefly various visual deficits and their implications concerning levels of functioning. Optic nerve, and pathway disorders are the result of various causes; namely, atrophy, infectious disease, injury, growths, degeneration, genetic or prenatal. The site, or where the interference occurs as a result of the disorder, is the single most important factor as regards functioning (Dennison, 1974). Each visual task needs to be analyzed in relation to the known area of visual loss. If the loss is of the lower half of the visual field, mobility will be affected. A loss of the right field of vision will affect reading, since reading print requires a left to right

progression of eye movements and scanning.

The matter of central versus peripheral vision is of serious importance. If central vision is lost, academics present a problem. Some physical activities are difficult if peripheral vision is affected. With either loss, social and adjustment problems are present to a significant degree. Frequently, the appearance of the eyes give no evidence of injury or insult (Dennison, 1974); a situation that, unfortunately, makes it so easy for the "sighted" population to expect a normal performance by those so affected. Conversely, how difficult it is for the low vision person to adequately explain all contingencies and conditions of their vision loss. To say nothing is to invite false perceptions and, yet, to offer a detailed account of what can and cannot be expected or performed may be interpreted by meaningful others as "excuse-offering" or protestations. Accordingly, these low vision individuals will require the assistance by all involved meaningful others in order to recognize their limitations; to make the best use of all clues; to learn coping responses and compensatory techniques; and to acquire the means by which they responsibly may assist others to acquire a realistic understanding of the visual problem.

Two other eye conditions require elaboration; namely, albinism and glaucoma. For some unexplained reason, according to Dennison (1974), extremes in personality are frequently noted. These individuals may appear excited, distracted, and flamboyant in actions and verbalizations, or

may exhibit compulsive and perfectionistic tendencies. It is the writer's impression that these latter behaviors are compensatory endeavors for the difficulties associated with the eye condition, difficulties which all individuals with albinism encounter. These individuals are light sensitive, fatigue easily when performing fine detailed paper and pencil tasks, and find it difficult to (smoothly and in a coordinated fashion) visually scan and track, and to effectively and rapidly shift visual focal points. The second eye condition, glaucoma, requires a constant monitoring of intraocular pressure. Frequently, these individuals have commented to the writer that they are constantly reminded of their condition; they worry and feel depressed regarding the prognosis; they notice continual changes in their visual efficiency, and they frequently experience pain and discomfort. Of concern to the writer, when involved in group therapy sessions with individuals who were acting out and behaving in a repetitious and compulsive fashion, the vast majority of these individuals, subsequent to the formation of these groups, were noticed to have glaucoma. Is it possible that the eye condition with its physical ramifications is an etiological factor responsible for the development of these behavioral traits? More research is needed regarding the manifestations of these two eye conditions.

DEVELOPMENT OF SELF CONCEPT

In order to understand the adjustment problems encountered by low vision persons and how to be of assistance in the resolution of these difficulties, it is important to be thoroughly knowledgeable of the process by which the self concept is formed and of the factors which hinder its development.

Each individual, visually handicapped or not, continually and reciprocally interacts with his environment, a process which results in "how I see myself may bear little relationship to how others see me and both of these will differ from how I really am" (Mehr and Freid, 1975). Maltz (1960) states that our perceptions of self and our environment are based on imagination, not fact. A person performs according to what he believes is true of himself and his environment. Our self image is what we believe to be true of ourselves. Davis (1959) believed that without an adequate body image, the self concept will be distorted. Pearson stated the self concept should be closely related to both the capabilities and the limitations of the body structure so that internal motivation will be realistically related to one's physical and mental abilities. Consider, therefore, the difficulties encountered by the sighted population, in general, when the body structure normally changes during puberty or when an insult to bodily functioning occurs. Again, consider the difficulties encountered by the visually handicapped, with and without

usable vision, in establishing an adequate body image when deprived of accurate visual feedback regarding bodily functioning or of the feedback of significant others. Obviously, visual efficiency fluctuates, or visual status suddenly deteriorates or improves dramatically and permanently.

All individuals have a need to feel adequate and competent, according to White and Adler. However, for certain individuals, the need is greatly intensified. Two explanations are offered; Adler believed some compensate their feelings of inferiority by striving for superiority. Others compensate by denying all inadequacy. With regard to the visually handicapped, it is difficult to master one's environment and easier to deceive oneself. Feedback from the environment may be blocked by avoiding certain situations or by blocking negative feedback. The process is complicated by and made easier by the fact that some sighted individuals overprotect the visually handicapped. Nevertheless, the defense mechanism of avoidance is helpful since in its absence there would be a discrepancy between the perceived self and how others are perceived to view the self. If a discrepancy occurred, anxiety would be the result; hence, a second need would exist, that of avoiding anxiety. Three methods are frequently employed. First, only positive information regarding one's performance (selective perception) is obtained and certain new or unpredictable situations are avoided. Second, one's inadequacies are rationalized or projected upon others or displaced on the

"handicap" ("but I can't do that, I'm visually handicapped"). Third, the perceptual field is collapsed or expanded. These individuals become an expert in and devote their whole lives to a singular or isolated endeavor or acquire a smattering of or become involved in a multitude of activities and responsibilities.

Cowen, as stated by Davis (1959), suggested that low vision individuals may differ in their adjustment to their visual condition as it affects their self concept. They find it difficult to perceive themselves as "sighted" or "blind," perceptions encouraged by attitudes or environmental demands made by significant others. They feel "neither fish nor fowl" owing to being able to function differently in various situations and to the variable expectations expressed and demanded by differing adults and peers. Dependency versus independency needs further complicate the process of acquiring an adequate self concept. Mehr and Freid (1975) accurately describe the situation of when fulfilling one's dependency needs may be more rewarding than striving for independence.

Lowenfeld (1980) discusses the use of hearing by the visually handicapped as an assist in acquiring environmental feedback. He noted that the visually handicapped develop through practice the ability to discern in voices certain moods, emotions, attitudes, and traits. The visually handicapped rely too heavily on the voice as an indicator of a person's character. Interestingly, the process is

similar to "seeing" individuals who form impressions and make judgements on the basis of the degree of visual pleasantness. Imagine the unfortunate situation individuals with a "normal" rasping voice or "impeasing" visual appearance must encounter. Lowenfeld (1980) mentioned Allport's study comparing blind and sighted subjects in their ability to judge personal characteristics by voice alone. He noted that, contrary to popular belief, the blind were less accurate in their judgements than the seeing. It was noted that the absence of visual clues prevented the correction of errors. Of significance, it is conjectured that distorted or limited visual feedback, as is found with low vision people, would be of no greater assistance. Facial and postural nuances, to be accurately perceived will be missed even though they are of prime importance and are what sighted individuals employ, consciously or not, to express feelings and attitudes and rely upon to determine the environment's response to self. In addition, verbal responses are neither encouraged nor often provided. Consider, therefore, the problem of the low vision person who is denied accurate and reliable visual imagery in interpersonal relations and attempts to obtain and rely on auditory feedback. An inaccurate and not detailed visual system is combined with an unreliable or unavailable auditory source of information relative to environmental needs and feedback regarding the performance of self. Obviously, intervention is required to assist low vision persons in the development of coping skills; instruction, interpretation,

role playing, and group sessions.

ADJUSTMENT DIFFICULTIES

Numerous studies and investigations have been made over the years by a variety of authors. For the purpose of clarity, the results of these efforts will be grouped according to the following classifications: adjustment difficulties encountered by the low vision, adjustmental comparisons between the low vision and blind, sighted perceptions of the low vision, and characteristics required for successful adjustment.

LOW VISION ADJUSTMENT DIFFICULTIES

Bateman (1962) found that partially sighted children were characterized by a greater child's perception of pity and poorer parental understanding. She cited Underberg who stated the partially sighted were less able to accept their visual limitations than those whose handicaps were even more severe. Karnes and Wollerstein (1963) found that 75 percent of partially sighted children studied had moderate to severe adjustment problems, the remaining children having mild problems in specific areas even though considered adequately adjusted. The trend was supported by Peabody (1966) who indicated that the outstanding characteristics of partially sighted children were under-achievement, fatigue, and emotional problems.

Glass (1970) was interested in the psycho-social responses of adventitious low vision individuals to residual vision. He noted that readoption in patterned relationships consisted of the modification of expectations. However, a lack of knowledge of the process of how to adapt to low vision results in the adaptation being random and trial and error in nature and often results in increased tension and accumulated frustrations. He was of the opinion that three personality types tend to develop; those who use the blind aspect to gain an advantage, those who identify themselves as sighted, and those who attempt to learn the maximum use of residual vision as it relates to the total life situation. He discussed the rewards, as offered by sighted individuals, and penalties, as offered by knowledgeable individuals, when "shamming" is utilized by low vision persons. These rewards are occasional, and reinforcement may be withheld in other areas of role enactment. He recommended the development of a language and skill in the communication of experiences to meaningful others.

Numerous studies and investigations, as reported by Lowenfeld (1980) and others over the years, have repeatedly confirmed the belief that a visual handicapping condition is not the etiology of emotional difficulties. Although the emotional status of a visually handicapped person is influenced by, and affects the reciprocal interactions within a family constellation, the stresses other family members experience when a vision loss occurs are felt to be

exacerbations of earlier emotional reactions which previously existed, compensated well for or not. Moreover, extensive investigations have been made of the role the mother assumes regarding the development of the visually handicapped person. At this point, the writer would like to express the need for service providers to be sensitive to the needs of parents. In addition to the typical "reactions" so aptly described by many writers, parents are faced with the difficult task of simultaneously dealing with these reactions and making adjustments in their daily routines that affect the total family unit. The task is complicated by a lack of knowledge and experience that would result in a conceptual background by which hopes could originate and fears be controlled. If, in addition, the prognosis is uncertain, the extent of residual vision undetermined, the degree of vision usefulness unknown, and the possibility of additional difficulties unanswered, is it possible to grieve when unsure of what it is that they're grieving for, or to accept, when unsure of what it is that should be accepted? What a task--to struggle with one's emotions and feelings and simultaneously to give to others!

COMPARATIVE ADJUSTMENTAL DIFFICULTIES-LOW VISION AND BLIND

Jervis (1959) conducted a significant study to determine whether the self concept of blind adolescents differed significantly from that of sighted peers. The University of Rochester group conducted a similar investigation. Both efforts concurred that there were no significant, essential,

or consistent differences, except that blind adolescents used more extreme descriptive statements to describe themselves. Jervis noted more blind subjects had either high positive or high negative attitudes toward themselves. Yet, the question remained regarding possible differences within the visually handicapped population; namely, would significant adjustmental differences be found when comparing low vision individuals with those with no usable vision?

Meighan (1971) utilized the Tennessee Self Concept Scale and found the self concepts of the blind attending residential schools were in an extreme negative direction. No significant differences were found between the blind and partially sighted. These results differed from those obtained by Bauman (1964). She found, utilizing the Adolescence Emotional Factors Inventory, that partially seeing students showed a significantly higher level of anxiety and insecurity, a greater sense of social loneliness, and were less well adjusted to their handicap than blind students. In support of these differences, Cowen (1961) found that partially sighted adolescents ranked slightly lower in adjustment than the legally or totally blind.

Without question, more research is required to more definitely answer the question and to identify in general those variables responsible for poor adjustment, and in particular, the effect of age, educational placement, etiology of the visual condition, onset of the condition, and level, if any, of remedial intervention, in particular.

SIGHTED PERCEPTIONS OF THE LOW VISION PERSON

Recognizing that the image one has of oneself is affected by the opinion of and feedback received from others, it is important to comment on the perceptions of visually impaired individuals by their sighted peers. Bateman (1962) investigated sighted children's perceptions of the ability of blind children. She found that subjects who had known blind subjects tended to appraise the latter group's abilities more positively, increasingly so with the number known. In addition, positiveness increased with successive grade levels, particularly between grades three through six. More favorable responses were made by urban than by rural children. Jones, Lavine and Shell (1972) investigated the question of acceptance of blind children by their sighted peers and the sociometric characteristics of those sighted children who showed a high degree of acceptance of their blind classmates. They found that blind children tended to be less acceptable and that, generally, those sighted children who accepted the blind favorably tended themselves to be social isolates. What appears to be excluded, or at least not investigated fully, are studies addressed specifically to the low vision population, particularly the other segments of the population.

SUCCESSFUL ADJUSTMENT CHARACTERISTICS

Numerous studies and investigations over the years have attempted to define and describe the characteristics and attributes of low vision individuals who successfully adjusted

to their conditions or the aids prescribed for increased visual functioning. With regard to the effective use of prescribed aids, Freeman (1954) reported that the attributes of the Examiner, the personality and outlook of the patient, and the type of adjustment the patient made to his visual impairment, were important factors in determining the successful utilization of low vision aids. Kelleher, Mehr and Hirsch (1971) were of the opinion that a successful rehabilitation and optional use of a low vision aid were due to many factors, the most important being the positive attitude of the subject. In attempting to discover why a low vision person who could be helped by a low vision aid often chose not to use it, Mehr, Mehr and Ault conducted low vision patient discussion groups. The duration of the condition, its severity, patient age, degree of motivation, level of intelligence, and the nature of the pathology were cited as contributory factors. Successful patients were felt to be more flexible, had a higher level of self regard, and developed stronger peer group relationships. Faye (1970) described similar characteristics. In addition, a sufficiently strong central acuity, adequate eye motility, and a stable pathology of long duration were stressed.

With regard to successful adjustment, Bishop (1972) stated the importance of encouraging positive self attitudes among the visually impaired. Encouragement in areas of self acceptance and self expression was stressed. Frequent positive personal contacts who offer the low vision

individual security and acceptance was suggested. Allen (1972) was of the opinion that the key to adjustment was the development of an awareness of the interrelationship between the low vision individual and the rest of the world. Both studies stressed an experimental and interpersonal approach and need for low vision individuals to receive accurate and frequent feedback from the environment. McGuiness (1970) compared the advantages and disadvantages of various educational settings and drew conclusions regarding special school and itinerant teaching programs with regard to level of independence achieved and degree of maturity. He felt that students in itinerant programs develop a stronger self image owing to the number of friendships with sighted peers that are developed.

Developing "normally", achieving an adequate self-concept, and acting maturely and confidently do not happen automatically and are not the sole result of the type of educational placement or rehabilitation setting attended. Direct interventions that stress accurate feedback from the environment, that offer the means to cope with less than reliable visual information, and that assist the individual to function with ease, maturity and confidence in his relationships is necessary and must be provided in order to insure competence and adequacy.

SUGGESTIONS FOR INTERVENTION

"There are few people who have the innate ability to understand and work effectively with persons who have sight loss. The mechanism of conscious control is important both from the standpoint of helping the low vision trainee--as well as the need for constant monitoring of our prejudices and anxieties as we work professionally in the rehabilitation process." ("The Partially Sighted Person, A Marginal Man," Group #5)

Burlingham (1941) concluded that the lack of sight disturbs and diminishes the testing of reality, one of the most important functions of the ego; instead of compensating, the visually handicapped turn to fantasy. It is the writer's opinion that low vision individuals, as reported earlier, equally have difficulty reality testing and obtaining accurate and meaningful visual feedback from the environment. We are very much aware how difficult it is to verbalize all thoughts, impressions and attitudes, particularly with regard to one's subjective and emotional thoughts. In addition, we are made anxious and "invite" possible negative responses if we were to verbally and deliberately request verbal feedback from significant others regarding our performance. Nevertheless, it is imperative and crucial that low vision individuals be assisted with the means to obtain and interpret auditory information from the environment and how to abeit its expression. It is suggested that there is no substitute for the utilization of significant meaningful others (family members, teachers and involved service

providers as they offer themselves as "models" for the integration of what is happening non-verbally in the environment or from within themselves as well as demonstrating through their actions the "permission" and "acceptability" of directly requesting verbal feedback regarding their performance. The successful provision of the process requires that significant meaningful others be well versed in what constitutes successful and unsuccessful communication patterns.

An indication of a successful interaction involving effective communication skills is the absence of a conflict regarding the "expectations" of the two parties. It involves, more often than not, speaking in the first person, predominately using the present tense, and the spontaneous expression of feelings and impressions. There is no hidden agenda. When conflict occurs or when "expectations" conflict, subtle changes occur:

1. There is a tendency to speak of what the other person does, feels, or is responsible for.
2. There is a tendency to stress or react to the inaccuracies of the other person's perceptions.
3. There is a tendency to withhold our feelings, frequently justified as "listening".
4. It is increasingly difficult to openly admit one's limitations or to admit not understanding what is being said.

Obviously, the utilization of significant meaningful others as they offer themselves as "models," demonstrating

effective communication skills, requires that information must be offered relative to how to be successful. From a review of the data concerning the impact of "helping" or counseling, Ivey (1980) concluded that the evidence regarding the actual effectiveness of counseling and therapy is mixed, yet the bulk of the data suggested that clients do benefit from the process. He noted that in all likelihood different theories are likely to be differentially effective with different clients who present different problems. Although it is not appropriate at this time to thoroughly discuss counseling theories and practices, it is considered helpful to discuss, regardless of which theory is employed or which set of difficulties are discussed by the client, those characteristics of successful service providers.

A successful interaction, at all levels of involvement, as offered by an effective "helper" or counselor involves the possession of and demonstration by the involved other certain identifiable characteristics. They are as follows:

1. Sensitivity
2. Empathy
3. Positive regard
4. Respect
5. Warmth
6. Concreteness
7. Immediacy

8. Confrontation9. Genuineness

Sensitivity is not taught or acquired, it is felt and experienced. It is an awareness and understanding. It is exclusive of judgement. Interestingly, formal counseling programs have attempted to encourage its development in trainees only to find negative results (O'Hern, 1969). In many cases, levels of sensitivity declined subsequent to the completion of training programs.

Empathy should not be confused with sympathy. Empathy is seeing the client's world from his perspective. It is the utilization of the attending skills of reflective listening to hear the client accurately. It is using influencing skills and the sharing of yourself and your expertise, but always within what the client can absorb and within his frame of reference.

Positive regard is unconditional and involves the offering of selective attention to the positive aspects of client verbalization and behavior. It is the offering and recognition of the positive assets of the client.

Respect involves the offering of enhancing positive statements to the client and the encouragement to move forward. Open and honest appreciation of and toleration for differences are felt and expressed.

Warmth is expressed primarily by non-verbal means. It is the use of vocal tone, posture, and facial expression

to express a caring for the client. With regard to low vision clients, these expressions must not be subtle or inconsequential.

Concreteness is being specific, obtaining details, and requesting clarification of facts and feelings.

Immediacy is the responding in the same tense as expressed by the client, present, past, or future. Effectiveness is often demonstrated when clients spontaneously start using all three tenses as they look at themselves.

Confrontation is meeting the client directly and pointing out differences, mixed messages, incongruities, and discrepancies in verbal and nonverbal behavior. Confrontation is not expressing your differing opinion, no matter how helpful.

Genuineness is being truly yourself in relationship with others, authentically and spontaneously. It is being sensitive to the needs of the client and still being truly yourself. It is the ability to be transparently real without being engulfed by the needs of the other.

With regard to suggestions for rehabilitation counselors or psychologists working with low vision individuals, it is suggested that the purpose of intervention not only be remedial but involve prevention and the development of intentional functioning. The psychoeducational model would seem appropriate for low vision clients and/or significant others in their lives should they express a desire to learn better

communication skills, improve their interpersonal relationships, or develop more effective coping strategies regarding their difficulty in obtaining more reliable feedback from the environment.

Lastly, it would seem appropriate to discuss our involvement with "difficult" low vision clients or their parents. The term "difficult" implies they are negative, hostile, uncooperative, and unworkable. Unfortunately, it makes it too easy for ourselves to limit our involvement or to convince ourselves it is not worth the time or energy. The writer prefers to view them as "dissatisfied" and, in many cases, justifiably. The typical service to low vision clients and their parents often consists of little or conflicting information, fragmented or infrequent information and advice, and the lack of recognition of or response to their needs.

For the angry, distant, or verbally expressive client or parent, listen and respond to not the words but the feelings, often not verbalized, of "I'm hurting, I'm afraid, or I fear." Do not delimit contacts, conferences, interviews, or encourage a separation of services. Rather maintain regular and frequent contacts, use your attending skills, be empathetic and genuine, and employ immediacy and confrontation.

"Working with the low vision person requires added tenacity and flexibility, coupled with a strong inclination toward innovation and deviation from the patterned methods."
("The Partially Sighted Person: A Marginal Man," Group #5)

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IMPROVING PROFESSIONAL AND COMMUNITY RELATIONSHIPS
IN LOW VISION SERVICES

by

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Youths and Adults

IMPROVING PROFESSIONAL AND COMMUNITY RELATIONSHIPS
IN LOW VISION SERVICES

My credentials in low vision stem from a professional involvement in the field of blindness for the past twenty years and as a recipient of low vision aids beginning in 1952. From this vantage point you can well understand my enthusiasm in the development, in cooperation with other capable professionals, of low vision services in New Hampshire while State Director of Blind Services, and in South Dakota while Superintendent of the South Dakota School for the Visually Handicapped. Presently, I am Associate Director of the Helen Keller National Center for Deaf-Blind Youths and Adults. During the past year, I have worked hard toward the development of low vision training following the examination and prescription of aids. During all this period of time, I have gained some experience in the administration and financing of a low vision clinic service in rural and in institutional settings. I would like to pay particular tribute to Dr. Randy Jose and Dr. Gerald Friedman, who were particularly helpful in setting up and training persons to run these clinics. The exchange of information and materials during those beginning years was indispensable to achieving quality services.

I concur with Dr. Haffner when he states that, "America is retarded in its social development and it is the last of the great western powers to achieve a program of national health care. The history of the past half century will not look kindly upon the leadership infra-structure with regard to health care. The retardation of the development of a national program of health care will be viewed as a denial of human need although the country had the resources" (1978). It was the late Pope Paul VI who said, "No one is justified in keeping for his exclusive use what he does not need when others lack necessities."

We, as professionals, have the responsibility of providing the knowledge to our community leaders to ensure that those needing this important service of low vision training receive it. The tangible optical aid alone is not sufficient. We must provide the necessary training to use it. In New Hampshire we settled on a mobile van bringing services to the clients. In doing so, we had many contacts with churches throughout the state that would allow us to use their facilities for the diagnostic and prescriptive part of our services. Local service clubs or other volunteers provided transportation to the site. It has been said that low vision services cannot be provided in a rural state, but our model in New Hampshire proved otherwise.

In South Dakota, we used the office of a cooperating optometrist for the prescriptive phase and the local school for the visually handicapped for the other phases. I am sure that after some experience, these services will also be provided in the homes of the clients. It is important to understand that there are many forms that a low vision service can take depending on geography, demography, transportation services, and the preferences of sponsoring agencies and cooperating groups, keeping in mind that the primary goal is to give the clients a comprehensive, accessible, quality service.

One thing that proved to be successful in New Hampshire was an extensive involvement by the Lions Clubs of the state. This occurred after an energetic educational campaign regarding the target population and the needs of low vision and blind persons. This effort resulted in support for the low vision program and the general programs for the blind of the state.

In addition to service clubs, the private agency played an important role in providing referrals, social work, and orientation and mobility services. Public health agencies provided referrals. Church bulletins and newspapers gave us publicity which was indispensable for our success. As you can see, many people can and will participate. Protec-

tion of one's turf should not be fought for fear of losing one's job or professional status but to ensure high quality services to the clients we serve. A fine example of cooperation for the betterment of clients was that of the Boston University Low Vision Clinic in Boston. Prior to starting our program in New Hampshire, most of our clients were going to Boston. With the coming of Kent and Connie Carter in New Hampshire much of the follow-up training could be done within the state. The professionals of the Boston University Clinic provided training in support and consultation to the New Hampshire Vocational Rehabilitation Agency in order to set up our own clinic; and after we were established they sent us referrals of New Hampshire residents whom they were serving. By their cooperation, the Boston University Low Vision Clinic ensured continued high quality services to their former clients in New Hampshire.

In the preliminary work done to set up a clinic, I had been forewarned that a battle would take place between ophthalmologists and optometrists. This did not occur, primarily because we defined the roles of each discipline and recognized that they were both essential to the success of our program. It was more difficult to bring together the other professionals, such as teachers, rehabilitation counselors, and social workers. The input from all these

professionals gave information necessary to the director of the service. Dr. Randy Jose has stated, "We are all interested in the patient's level of visual functioning and the specific objectives of the program in which the patient is presently involved. In this way, we can gear our clinical evaluation towards specific objectives. We need your reported observations if we are to provide the information you need about the patient" (1978).

Getting every discipline to participate actively required a reexamination of roles and competencies. There is a tendency in all of us to drift outside our professional turf. The doctor wants to make educational decisions; the teacher medical decisions, etc. "Given a reasonable amount of interaction and definition of roles, there is no reason why ophthalmologists and optometrists cannot function to their mutual advantage in the low vision clinic" (Faye, 1975). I would add to that the other indispensable professions. In the definition of roles one should recognize the functions that must be carried out in a low vision clinic. Very often we pay more attention to the titles of the jobs and our social interpretation of these titles. For example, it is not always wise to make the ophthalmologist the administrator. Depending on the size of the clinic, it may be wise to examine which one of the professionals has the best adminis-

trative skills. By looking at functions, one might be able to combine a vision stimulation trainer with an orientation mobility specialist, or a rehabilitation teacher or itinerant teacher, provided that they have received proper training. A social worker might make a good administrator, etc. Define the functions and then fill the positions with the most capable individuals. Understanding communication is essential to achieving the necessary cooperation vital to the successful functioning of a low vision clinic -- and we must add to that a commitment to meeting the needs of the visually impaired.

Another area that we must be cognizant of in order to improve professional and community relationships in low vision services is that there is a high rate of visual loss among the socially disadvantaged. Surveys conducted by the National Center for Health Statistics in 1971 and 1977 indicated that "low vision is strongly, but inversely, related to family income. The lower the income is, the greater the risk of low vision. In addition, more non-whites report visual loss than do whites" (Friedman, 1978). Taking this into consideration and all that it implies (lower educational achievement, possible linguistic difficulties, economic status, and even possible social aspiration) the low vision service team will be better equipped to satisfy the consum-

er's needs.

So far I have focused on the individual receiving the services. One important component is his family. The support of the family for the client trying a new aid may be more significant to the acceptance of that aid by the client than anything that might have taken place at the clinic. The aid may achieve all the objectives desired but the client may feel that it is not worth the ridicule, expense, or physical discomfort of wearing or carrying that aid. The family's support day in and day out is essential if the client is to get through the adjustment period. Therefore, they must understand what the aid will or will not do. The social worker or other counselor must explain the low vision procedures and the limitations of the prescribed aids.

"The ability of the patient and family to negotiate a complex, pluralistic health care system, will vary. Because those overwhelmed by difficulties are often less able to seek appropriate help, the social worker and the entire low vision service staff must make sure that each referral is carefully arranged according to the family's talents, needs, and abilities" (Friedman, 1978). Depending on the circumstances, we must remember that some clients are coming through a traumatic situation of losing their sight. Just as in the

rest of rehabilitation, the appropriate moment to intervene is crucial to the success of the plan.

In order to achieve friendly relationships with the funding agencies we must advise them that low vision services are a lifelong process and that depending on the vocational, recreational, and activities of daily living needs, the aids will or may have to be changed. Other variables that can lead to a need for change are changing eye conditions and acuity and new technological advancements. Unless they understand this they may become disenchanted with funding the cost of aids. For those who depend on Vocational Rehabilitation for their funding, the cost of anticipated changes should be included in post-employment recommendations.

Since my employment at Helen Keller National Center, I have become aware of a population that is greatly underserved and which has great needs. This is the Usher's Syndrome group. It is large and the severity of their condition requires special attention by us. The communication barriers and the lack of understanding of the condition, compounded by the seeming inability or unwillingness of the professionals to explain to the deaf this condition, are tragic. Low vision services can do much to maximize remaining vision in this population; and I hope that community cooperation will include services to the deaf and all those

in need of it regardless of social, economic, or handicapping condition.

In conclusion, let me state that a low vision service is rarely self-supporting. Haffner, in a survey of 40 third party insurers, found that they all covered low vision care and therapy under major medical insurance, but not under routine medical-surgical coverage (1978).

Thus, the decision has been made. Low vision diagnoses and therapy are encompassed in the specialized high-risk coverage of major medical insurance. Medicaid, in several states, provides for the coverage. Another source for possible funding may be from Vocational Rehabilitation. In November, 1978, President Carter approved a bill improving and extending the provision of the Rehabilitation Act of 1973. As a result, funds may be available for new low vision services if these services are innovative, serve the most severely handicapped, and increase the number of individuals who live independently.

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IMPROVING SERVICES FOR PEOPLE WITH LOW VISION
BY MEANS OF INFORMATION AND RESOURCE SKILL TRAINING,
INDIVIDUAL ADVOCACY, AND SELF-HELP PROGRAMS

by

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IMPROVING SERVICES FOR PEOPLE WITH LOW VISION BY MEANS OF
INFORMATION AND RESOURCE SKILL TRAINING, INDIVIDUAL ADVOCACY,
AND SELF-HELP PROGRAMS

Most people who are legally blind might more realistically be called "hard of seeing," and most blind people have once had sight. Services for these "blind" people, as well as the many more low vision or partially-sighted non-blind population, are presently inadequate and should be redesigned to meet appropriate needs. It is the purpose of this paper to discuss various problems.

Historically, most services for visually handicapped people have been geared to the needs of the totally blind and often designed for those who have never had sight at all. However, statistically, according to studies made by the American Foundation for the Blind, the National Society for the Prevention of Blindness and others, at least 80 percent of the blind population have some useful vision and about the same percentage (whether totally or legally blind) have once had normal sight.

There are many causes for the discrepancies in service provision, much of it probably because traditional services have not caught up with the changes in society, technology, and the composition of the blind population itself. Some of these changes include mainstreaming, the increased importance of visual communication and learning, consumerism, the development of electronic and low vision aids, and the increasing longevity of life. The median age of the blind

population, now at about 70, in and of itself brings altered service needs (i.e. less emphasis on vocational rehabilitation and braille, and more on low vision services). Low vision services can effect major changes in the life style of many visually impaired individuals. For example, a common visual impairment such as senile macular degeneration leads to partial rather than total blindness, and we often find that an elderly person with central visual loss moves rapidly back from a blind to a sighted world, both physically and psychologically, once he has been introduced to and properly trained to use low vision aids.

Surprisingly, it may be more difficult to set up adequate services for people with low vision than for the completely visually disabled. The needs of the low vision client will vary not only according to his abilities and goals, but according to his visual problem(s) as well. Fluctuating vision, stable conditions versus progressive loss, narrowing fields versus central loss, all play a role in what kind of services are needed.

One possible rehabilitation service is an orientation and mobility training program. But unlike similar training programs for totally blind individuals, the program may vary markedly for partially sighted and low vision individuals. A client with 20/20 visual acuity and severely constricted visual fields would need very different mobility training than one with poor visual acuity but full visual fields. In addition, a person with progressive sight loss will often

need more psychological or supportive counseling than a person who has been blind all his life, or who has learned to cope with a stable condition.

Each low vision client will require his own unique rehabilitation program, both quantitatively and qualitatively. With patience and ingenuity, methods can be devised to initiate and maintain specialized services. I believe one way to start might be to have a gradation of available services, depending on need with no abrupt jump from partial-sightedness to the formal status of legal blindness. A person with macular degeneration, for example, might benefit from the Talking Book Program before legal blindness ensues. A person with typical narrow-field retinitis pigmentosa, who has been legally blind for many years, may have no need for this service.

Need for Increased Awareness

One of the first steps we can take to more adequately help low vision people is to make them, their families, and the public-at-large aware of what low vision and/or legal blindness is and is not, and what can and cannot be done to help. Also included in this increased awareness must be the patients' eye doctors. Specialists on diseases of the eye are often poorly informed about the multiple services that can be provided for their patients' better adjustment to sight loss. Surgical and medical procedures, though of prime importance, are not the total answer for a patient with diminishing vision, and it becomes even more imperative, when other procedures fail, to provide low vision patients with opportunities for approp-

riate rehabilitation services.

In my own state of Massachusetts, the law reads that legally blind patients be registered as such with the State Agency for the Blind by their ophthalmologists or optometrists. VISION Foundation, Inc. (a Massachusetts organization described later in this paper) finds that about 25 percent of those who initially call for help because of sight problems are, indeed, legally blind and do not know it. Many of these people have not been registered by their doctors and have thus been denied or delayed services they need to help them better manage their lives.

People with sight loss do not always find it easy to obtain services on their own initiative. Sometimes, too, when people first begin to lose their sight, they are frightened by the word "blind". Now, with diminishing vision, not only are they cut off from the very information they need by their inability to ready about appropriate resources, but the threat of the world "blind" may make some low vision people reluctant to turn to public and private agencies who should be serving them.

Unfortunately the word "blind" is perceived in a negative manner by most sighted people. Of all the sensory handicaps, it is the one most feared. A massive, national public relations drive would be in order to attempt changing the negative and even "dreaded" connotation this would often bring to mind. Totally blind role models who are leading successful, independent lives might be used to mount a change in public attitudes

and to help the sighted population realize that "blindness", in and of itself, does not place a person in either the beggar or genius role. Another solution might be to change the names of some of the public and private agencies to something less threatening.

VISION Foundation

VISION Foundation, Inc., of which I am president, has developed several techniques to provide easier access to information in a non-threatening way. VISION is a non-profit, human service organization of and for the newly blind, the visually handicapped, and people with progressive eye diseases. VISION began inconspicuously in 1970 as a small self-help group for people who were losing their sight, but not yet blind. The group sprang from the direct unmet needs of those involved. Our problems were many. We were not blind and could not be served by the agencies who serve the legally blind, and the State Agency for the non-blind disabled was totally inadequate for serving low vision clients. Nor, when seeking information about what services were available for people like ourselves, did we find many resources. By sharing information and giving emotional support to one another in small monthly meetings and via a growing network of buddy telephone calls, we gradually became expert service providers for ourselves and others who were losing their sight.

Our original contacts came from a "cry for help" letter published in the Confidential Chat Section of "The Boston Globe" newspaper. Several people in a similar situation responded, and

so VISION was founded. From this grassroots beginning, and by word of mouth, we grew to the point where we now answer 7000 requests for service each year, helping people like ourselves to cope with all degrees of sight loss.

Some people who request our services are not anywhere near legal blindness. They may still be driving cars but have a progressive eye disease such as retinitis pigmentosa. Some, now totally blind from problems like diabetic retinopathy or glaucoma, came to us when they could still see. Our services, developed and maintained by people with sight loss, are geared to their specific needs.

Because of our consumer-based origin, with its built-in self-referral system, we are not faced with the problems of client confidentiality that restricts other agencies. This allows for the use of one of the most important aspects of our work: "hooking people into people." For those people who want contact with others like themselves, we set up a short, profile intake card containing: name, address, phone, age, degree, onset, and nature of eye disease, other handicaps, interests, etc. People are then matched to one another by a buddy phone system which allows for therapeutic rapping and information-sharing while at the same time reducing loneliness and isolation.

Self-Help Groups

When we have gathered enough people together from one area, a monthly self-help group is established. These sessions run from three to four hours, with close contact maintained in

between meetings via the buddy phone system and through our office.

The groups are organic and open-ended, changing with the needs of those who participate. The ideal group consists of 8-12 people. One or two coordinators take charge of each group, seeing that transportation is arranged, that people are contacted on a regular basis between meetings, and that no one person monopolizes a group meeting. Sometimes an outside speaker is engaged to discuss such subjects as low vision aids and orientation and mobility, or to demonstrate the latest aids and appliances. More often, the time is spent in peer counseling and information sharing.

Because of transportation expenses, we find it more feasible not to meet at closer time intervals. Instead, we meet for a long session, once a month with buddy phone calls in between. This system has worked out well, and particularly so, now that the program is funded. When our self-help groups were run on all-volunteer basis, meetings were more sporadic. Foundation grant funding enabled us to open a state-wide Information, Referral and, Advocacy Center in January, 1978.

At the present time, we hold seven, separate self-help groups each month, serving over 100 participants. The buddy phone system serves an additional 250 people. Our coordinators are trained on an informal basis by participating in the groups. They are also provided with group coordinator training kits which are available in large print and on cassette.

We find that the self-help groups are more valuable for people who are first confronting sight loss or have progressive eye diseases, than for those who have been blind for many years or are partially-sighted with a stable condition.

Our networking system has spread across the State and reached beyond. The programs were originally conceived from self-need and were on an all-volunteer basis. By providing services that were not being handled by other agencies, we unexpectedly developed work opportunities as well for people with sight losses.

At this time, our organization has about sixty part-time volunteers and paid workers, more than half of whom have varying degrees of visual loss. Twelve of these visually impaired people, several of whom are over sixty-five years of age, are receiving monetary compensation through grant awards for their work as Project Directors, Supervisors, Group Coordinators, and Resource Specialists.

Our self-help concepts have given people with sight loss the services they could not find elsewhere, while providing an atmosphere where they could gain confidence and strength by serving others like themselves. We encourage other organizations to set up services such as these, stressing, however, that in order to work, the programs must come from grassroot needs. They should take into account the unique problems of the specific communities involved and not be imposed from without.

Information Sharing

There are several procedures and information sharing techniques which may prove useful in establishing similar self-help programs for people who are visually impaired. The following list represents those that VISION has found to be most successful. It is hoped that some of the following techniques can be adopted by other agencies and organizations.

1. By using the word "vision" in our organization's title, we strive to increase our outreach to people who are visually impaired, but not blind.
2. Services are initiated, developed, and maintained by people experiencing sight loss. This can be therapeutic for both the service provider and the service consumer.
3. Information is shared in small group settings, either in a mini-course for the trainees at the Carroll Center for the Blind or in VISION's self-help groups.
4. We have developed a large print and cassette resource book written expressly for people with sight loss.
5. We have a state-wide, toll-free, telephone information center which is manned by sight-impaired volunteers.
6. We provide state-wide, toll-free, telephone information tapes. These are changed regularly, with up-to-date news on services, benefits, job opportunities, etc.
7. We have published an Inventory List, in large print and on tape, of over 100 resources in various media which we have gathered from around the country. This list

include materials such as large print cookbooks, brochures, raised line check samples, catalogs, etc. These items can be easily obtained, in one place, by a phone call or letter to our office.

8. We publish a quarterly large print and cassette Newsletter which helps keep people alert to new resources.
9. We have an informative and supportive tape library of particular interest to those with new sight loss.

Information and Resource Skill Training Techniques

Some of the following information-gathering tips are taught in our mini-course at the Carroll Center for the Blind and in VISION's self-help groups. When people come to these groups, we suggest that they bring taping equipment or a large note pad and black, felt tip pens. Most of the people we work with are non-braille users, and since many of them have not yet been evaluated for low vision aids, they often cannot make use of regular print materials. Therefore, in the following list of tips addressed to the visually impaired individual, sound and large print are emphasized, although braille and standard print items are also included.

1. Call your library for a list of all agencies in your state that serve people with sight loss.
2. Call these agencies and see what services they provide. Some have brochures in large print or information in sound, and some provide telephone information tapes on subjects ranging from health and legislation to

television and theatre listings.

3. Call your city hall and ask for the Human Service Department. They can either provide you with connecting phone numbers to transportation, volunteers, and service organizations, or tell you where else to call.
4. If you are 60 years of age or older (55 in some states) you may find even more help through your local Councils on Aging.
5. The following magazines and journals, national in scope, are available in media usable by people with sight loss, and will help keep you abreast of the latest resources. You will need a talking book machine or a Library of Congress cassette player for the sound versions of some of these publications.

A. The Braille Forum

- Monthly publication
- Available in large print, flexible disc, cassette-on-loan, and braille
- Published by: The American Council of the Blind
190 Tattimore Road
Rochester, NY 14620
- Cost: Free

B. The Braille Monitor

- Monthly publication
- Available in regular print or on flexible disc (braille for deaf-blind only)
- Published by: The National Federation of the Blind
1800 Johnson Street
Baltimore, MD 21230
- Cost: Free to members, \$15 per year to non-members

C. Dialogue

- Quarterly publication
- Available in large print (\$12 per year)
on flexible disc (\$6 per year)
in braille (\$20 per year)
- Published by: Dialogue Publications
3100 Oak Park Avenue
Berwyn, Ill. 60402

D. Journal of Visual Impairment and Blindness

- Monthly Publication (except July and August)
- Available in regular print or on cassette
- Published by: The American Foundation for
the Blind
15 West 16th Street
New York, N.Y. 10011
- Cost: \$15.00

E. Matilda Ziegler Magazine

- Monthly Publication (except July and August)
- Available on flexible disc and in braille
- Published by: Matilda Ziegler Magazine for
the Blind
20 West 17th Street
New York, N.Y. 10011

F. Talking Book Topics

- Bimonthly publication
- Available in large print or on flexible disc
- Available through regional libraries for the blind
- Published by: The Library of Congress
National Library Service for the
Blind and Physically Handicapped
Washington, D.C. 20542
- Cost: Free

By familiarizing the visually impaired individual with the above resources and publications, the process of advocacy can be greatly facilitated (See Appendix for further Publications, Agencies, and Resources).

Advocacy

Services for people with low vision can be improved by advocacy on a general and individual basis. Consumer organizations such as the Council of Citizens with Low Vision are just the kind of organizations to help make major changes in improving services for people with low vision. Some organizations emphasize legislation and public education. Others, like VISION, turn to the specific service problems of the individual.

VISION maintains direct services for its "consumer-providers" and advocates on a one-to-one basis. Advocacy for individuals includes such assistance as helping register those who are legally blind with the State Agency for the Blind, in order to receive needed services and benefits, as well as helping to process the Talking Book Program for people who are not legally blind. Many are often unaware that this service is open to their non-legally blind individuals. Advocacy involves not only helping initiate, but following through an individual's rights to low vision services.

As service consumers, we advocate the right to easy-to-read, large print for people with low vision. Large print does not necessarily mean readable print, and most of the gray, thin, large print materials sent as "free matter for the blind", by agencies serving the blind, are more difficult to read than standard print. VISION has made a consumer study of readable print for people with low vision and, as service providers, we try to print as many materials as possible at a minimum

standard of 18 point, black, bold-face, sans serif type on non-glare paper.

These are but a few examples of how advocacy for the rights of low vision individuals can aid in the awareness and solutions to the many problems these people face. Agencies for the visually impaired can play a major role in needed changes, but I believe the basic thrust for change must come from consumer organizations themselves. They must seek legislative changes so that people who are "hard of seeing" no longer "fall through the cracks" in the rehabilitation process.

APPENDIX: ADDITIONAL RESOURCESAgencies and Consumer Organizations:1. The Council of Citizens with Low Vision

- A special interest affiliate of the American Council of the Blind
- Its members seek improvement in services for all low vision people via various methods such as public education and legislation.
- Address: Dr. Samuel Genensky, President
Partially Sighted Research
Santa Monica Hospital Medical Center
1250 16th Street
Santa Monica, Calif. 90404

2. The National Association for Visually Handicapped

- Specifically oriented towards serving the partially sighted, whether legally blind or not.
- Extensive information on low vision and large print resources, and many of their publications come in large print.
- Address: 305 East 24th Street
New York, N.Y. 10010

3. The Library of Congress, National Library Service for the Blind and Physically Handicapped

- Free reference circulars on many subjects such as low vision aids, recreation, national organizations, aids and appliances, etc.
- Excellent source for multiple resources available

4. VISION Foundation, Inc. (previously described)

- Now producing a new book: Coping With Sight Loss - The Vision Resource Book (will be available sometime in 1980 in large print and on voice - indexed cassette)
- Previously published: Information and Resources for the Newly Blind and Visually Handicapped of Massachusetts (in large print and on cassette - out of print)
- Distributes articles: 1) "A Course on Resources for the Newly Blind" - an in-depth discussion of resource-

gathering techniques (available in standard print and on cassette-\$2.00). 2) "How to Succeed At Being Blind"- supportive and informative article written by individual with retinitis pigmentosa (available in large print (\$4.00), and on cassette (\$2.00).

--Address: 770 Centre Street
Newton, Mass. 02158

5. The American Foundation for the Blind

--National resource agency for the visually impaired
--Broad-based resource and information source
--Catalogue of Publications listing all their informative publications and brochures
--Publishes Directory of Agencies Serving the Visually Handicapped in the United States. Includes a listing of Low Vision Clinics around the country (\$10.00).

--Address: 15 West 16th Street
New York, N.Y. 10011

Regional and Specific Disability Resources:

1. Contact Magazine

--Monthly publication
--Available in large print and braille
--Published by: The Massachusetts Association for the Blind
200 Ivy Street
Brookline, Mass. 02146
--Cost: \$6.00 per year (Available on cassette through VISION Foundation if C-90 cassette is sent)

2. Encore

--Several magazines of special interest to various disabled groups
--Available through regional libraries for the blind
--Cost: Free

3. Newsreel

--A correspondence club and resource information bulletin
--Monthly publication
--Published by: Newsreel
176 Brehl Avenue
Columbus, Ohio 43223

4. "Where Do I Go From Here?"

- Supportive and informative flexible disc for people who have recently become legally blind
- Can be played on regular record player
- Available from: Dialogue Publications
- Included is a pamphlet: "Promises to Keep" - for the family of newly blind persons
- Cost: Free

5. Blindness And Diabetes

- Available in regular print and on flexible disc
- Published by The American Foundation for the Blind

6. The R. P. Messenger

- Newsletter available in large print and on cassette (send own cassette)
- Published by: The Texas Association of Retinitis Pigmentosa
P. O. Box 8338
Corpus Christi, Texas 78412

Catalogues of Aids and Appliances1. Products For People With Vision Problems

- American Foundation for the Blind Publication
- Catalogue available in large print and braille

2. Independent living Aids Inc.

- Commercial Court
Plainview, N.Y. 11803
- Catalogue available in standard print only

3. Massachusetts Association for the Blind

- Catalogue available in large print and braille

4. Science for the Blind Products

- Box 335
Wayne, Pa. 19087
- Catalogue available in standard print and on flexible disc.

The above list of agencies, publications and resources is limited, though the number of available resources is extensive. The above can be used as a beginning set of resources. Through these and additional contacts and referrals, the low vision individual can become better informed and equipped to deal with problems arising in day-to-day independent living.

LOW VISION:
CONSUMER ADVOCACY, RESOURCES AND SELF-HELP GROUPS

by

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LOW VISION: CONSUMER ADVOCACY, RESOURCES AND SELF-HELP GROUPS

The need for consumer advocacy is more than a philosophy - it is a mandate by a number of federal laws and is as basic to the handicapped as freedom of speech and the asking for self-determination in a service to the visually handicapped. Those who are affected by this service have the right and the responsibility to determine what form and what will be included in that service. Friedman said, "Patients who understand their condition are better able to express their needs, develop rehabilitation goals, assume the responsibility for using low vision devices, and thus begin to learn and readjust their life activities" (1978).

For many patients, understanding their condition is not sufficient. Hope for recovery, which is so necessary in all other aspects of medicine, and fear of losing more vision, are major deterrents to adjusting to visual loss. Fluctuating acuities, new surgical techniques, and new medical modalities make adjustment to low vision frustrating and difficult to patients who believe that sight can be restored. One primary characteristic of these individuals is variable visual functioning resulting from changes in general physical and emotional health, change in lighting,

illumination, contrast conditions, unstable disease processes, family or social problems, and deteriorating job conditions. They may be unable to recognize objects or the faces of their friends one day and recognize them easily the next, or under different lighting conditions. Or they may bump into things and appear awkward one day and not the next. Their ability to use help may vary, too. Familiarity with the territory is very significant to the person losing his vision. It may be very difficult for the untrained observer to determine the degree of vision loss when observing a client on familiar territory. Many visually impaired individuals have learned to "fake it with confidence," which can be embarrassing if something has been changed around. Because of all the aforementioned variables, low vision clinic services must focus on the appropriate prescription of aids and devices geared to each client's visual needs. Diagnosis, family, employment situation, lifestyle, age, and education - all affect visual loss. Because individuals react differently to visual loss, care must be individualized and developed through a series of interrelated assessments by a multidisciplinary staff. The examiner focuses on visual capacity; the social worker or other counselors on psychological issues; the rehabilitation counselor on job situation; and the orientation and mobility specialist on travel requirements.

Much lip service is given to this multidisciplinary team approach, but I have seen little long-term follow-up on this, especially from clinics located in hospitals or university settings. Very often a client has the feeling of having gone to the candy store, selecting one aid under ideal conditions, and returning home to figure out how it works in the real world of insufficient lighting, glare, or fluctuating vision. The loaned aid program that many clinics have is an economic boon to the client but should not be an excuse for making a decision. The whole team should participate in making the decision as to what kind of aid is best.

It takes many visits to a clinic before a client can be successfully fitted, but the administrator of the clinic should see to the scheduling of that client in order to avoid the long periods of waiting so often experienced by those having to endure medical services. Those waiting periods may be well spent if a counselor works with the client to orient him to his eye condition, the limitation of the aids, or the social implications of using low vision aids. Even a good lesson in optics might be valuable.

In all the clinics that I have had the pleasure of frequenting as a client, the emphasis has been on acuity and optics. Little has been said or done with shading, tints, glare control, contrast, or different types of light-

ing assistance (such as fluorescent versus incandescent). It is time to start disseminating all information that has been gathered in these fields. Lighting companies, governmental agencies, sunglasses manufacturers - all have worked in these areas, but no one seems to have gathered this information and made it available to the population that could best benefit from their findings.

In 1978 Dr. Haffner asked that, "Studies are needed to determine the proper balance of brightness, contrast, color, and border contours to give the best possible functional vision in various eye disorders; that various visual field enhancers or magnification devices need to be evaluated for specific visual impairments". I call today for a review of these demands by Dr. Haffner made in 1978, because we who are visually impaired need these studies; and this kind of scientific approach to the field of low vision services will make it more professional and credible. Many of these factors have been discovered by the visually impaired on their own, but we do not quite understand the reasons why fluorescent lighting is so hard and tiring on our eyes. It would help if more attention were spent not only on the cosmetic appearance of a ring telescope but on the significant aspect of functional vision.

One program that was started as a result of clients'

input and staff sensitivity to their needs was providing "group services" to a group of retinitis pigmentosa clients. This group met monthly with a counselor who also had R. P. In addition, the families were included. Rehabilitation counselors acted as facilitators. All who participated benefited immensely from this program. Because of its success, a similar program was begun with a diabetic group.

"Services to groups and their families" was authorized by the Rehabilitation Act of 1973, but I find few rehabilitation agencies which have used this golden opportunity to better serve clients.

In conclusion, let me urge you to give the clients the opportunity to ask and express themselves as to their aspirations and fears. You may find it to be a challenge and find new ways to serve them more effectively.

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CONSUMER ADVOCACY FROM AN ORGANIZER'S PERSPECTIVE

by

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CONSUMER ADVOCACY FROM AN ORGANIZER'S PERSPECTIVE

ADVOCACY, a well-known term in society today, means different things to different people. To the American Civil Liberties Union, advocacy means landmark court decisions which change the interpretation of existing laws. To Ralph Nader and his associates, advocacy means creating public awareness of hazards being created that effect the health, safety, and well being of Americans. To Mimi Winer President of Vision, Inc., it means helping the visually impaired help themselves. To foundations, associations, councils, etc, like the American Foundation for the Blind or the Council of Citizens with Low Vision, advocacy often consists of lobbying for legislative changes, fundraising, getting accreditation standards for low vision clinics established and enforced, general public education, or research into areas affecting the partially sighted individuals. And finally, to coalitions such as the American Coalition of Citizens with Disabilities, advocacy takes the form of assisting in the establishment of advocacy groups and organizing them around common issues to assure necessary strength to gain a significant hearing in the political arena. But what about you--you the service provider working within federally funded institutions and agencies. What does advocacy mean for you? Where do you fit in? Can you even be an advocate? If not, why not? If so, how can you do this individaully and collectively?

Stephen Murphy, in his article "Vocational Rehabilitation Counseling and Advocacy...", identifies several areas of inherent incongruencies between the roles of "service provider" and "client advocate".¹ First, rehabilitation institutions, unlike advocates, have a number of different constituents-- such as clients, politicians, professional groups, and the general community. Second, consistency and continuity in advocacy activities can be hampered by the wearing of two hats, i.e., client's best interests and needs sometimes must be compromised with the needs of the agency's programs, procedures, or personnel. Third, service provider training encourages an aura of neutrality and objectivity, along with warmth and trust, in the client-practitioner relationship, while client advocacy implies an intense, affective and biased involvement. Fourth, the institutions, and not the clients, define the needs and problems of those whom they will serve and how they will be served. This requires clients to assume a status in order to receive services which may not be in keeping with how they view themselves nor with how their advocate should view them. Thus, divided loyalties can diminish the effectiveness of the advocate, watering down advocacy practices by service providers.

Yet, despite these incongruencies, the special needs of individuals with partial sight continue to go unmet. Service providers are aware of many of these needs and how the service delivery system is lacking or preventing the fulfillment of these. Service providers, generally, know which community

resources exist and which could be expanded or revised to better meet the needs of this population. Service providers often stay abreast of existing applicable technology and where the gaps are. Collective strength is needed to make changes on the larger scale, in the legal arena, in Congress. Should the service provider avoid getting involved if he/she cannot be involved consistently or totally in the true sense of the word ADVOCACY? No! (Even if he/she cannot be involved while on the job for some reason, there are always after hour activities.)

There are ways (short of engaging in Hatch-Act-identified conflict-of-interest areas) to serve as an advocate, a defender/pleader on behalf of the partially sighted. Let's look first at what you can do as an individual to prepare for, and serve as, an advocate. Later we will look more closely at ways to work effectively collectively.

INDIVIDUAL EFFORTS

Become Knowledgeable:

Become aware of the varied needs and major issues concerning the partially sighted in your locality, state, and region. Are the needs educational, financial, legal, technological, or service delivery oriented? Are low vision clinics sufficient in number and accredited? Are there enough low vision examiners, low vision aids, trained personnel for prescribing and teaching consumers how to use the aids? Are consumers being discriminated in the job market? Are ophthalmologists and optometrists making

appropriate referrals for low vision services? Do consumers know what is available for them and where? Do consumers have opportunity to have input into decisions effecting their services or manner of delivery?

Learn about ongoing statewide and nationwide activities on behalf of individuals with low vision as well as known resources available. Include in your list the American Foundation for the Blind, Council of Citizens with Low Vision, American Association of Workers for the Blind, Low Vision Clinical Society, League of Disabled Voters, etc. (Handouts will be made available giving addresses, phone numbers, etc. at the workshop.)

Become familiar with the political system, at both the state and national levels, i.e., where, when and how to tap it on behalf of consumers. Learn about the budgetmaking process especially, i.e., find out when these are prepared, reviewed, approved at the executive level, and acted upon. Also learn about ways to work effectively with legislators. A handy guide for learning about these areas is available from the American Coalition of Citizens with Disabilities called PLANNING EFFECTIVE ADVOCACY PROGRAMS.²

Become familiar with existing coalitions which may be useful for addressing needs that the individuals with low vision have in common with other organized groups. The handbook COALITION BUILDING not only describes one such coalition but also gives help in building your own.³

Seek Opportunities To Inform:

After expanding your knowledge of the problems and possible avenues of solutions (i.e., existing organizations, coalitions, or going directly to selected political bodies) seek ways to share your knowledge with appropriate others. SHARE WITH CLIENTS AND/OR THEIR FAMILIES information about low vision exams, aids, and follow-up services. Advise them of the financial assistance available for aids and exams as well as how to obtain it. Advise them of their legal recourse when available services are inadequate, inappropriately rendered, or withheld. Speak on their behalf when self-interests will permit it. Give them information on self-help groups in the area and national consumer organizations they may join; and when none are available locally, assist them in learning how to start their own groups or local chapters. (Handouts are available on how to start local chapters of the Council of Citizens with Low Vision).

SHARE WITH FELLOW PROFESSIONALS (individually, at your association meetings, and by submitting articles for publication) information on current progress in the field, new techniques, additional resources, or suggested strategies for improving the state-of-the art. Help keep each other informed of pending and relevant legislation and who is representing the consumers and/or service providers.

Along with keeping fellow employees and association members informed, it is sometimes expedient to see if other organizations who could be affected by the pending legislation know what is happening. Sometimes your advocacy

role can be filled through their efforts.

Last, but not least, keep your local, state, and national politicians informed. This can be done individually by preparing position papers, careful analysis of pending legislation and consultancy to individual legislators. Legislators cannot be expected to know all the needs of a particular segment of their constituencies. Carefully worded, brief statements of policy or summaries of facts about a need or pending legislation have guided many politicians in making sounder judgments. Even newspaper editors and concerned citizens appreciate hearing both sides of an issue or being made aware of the impact legislation may have adversely as well as positively. For example, many legislators voted for "right turn on red" during gas shortage pressures never realizing the problems it would cause blind individuals who are dependent on the stop and flow of traffic sounds to assure a safe crossing.

COLLECTIVE EFFORTS

Individual efforts are a beginning. Such attempts to bring about change, however, are often localized, help only a few individuals, and are often limited in scope. Collective efforts have the advantage of representing strength--power through numbers. In some issue-resolving situations this is an important wedge between action and inaction.

Basis For Collective Success:

The substance which cements any issue-resolving or problems-solving group regardless of its size, duration, membership composition, structure, scope, focus, etc., is threefold--(1) there is a problem(s) or issue(s) affecting all members of that group, (2) members recognize that they share common concerns, and (3) each potential member perceives that joint action will be more beneficial than individual action. In the case of low vision concerns, around which issue or series of issues should individuals rally? Should it be the issue of financing low vision clinics or creating comprehensive low vision care centers? Or getting existing financial sources extended to include aids for all age groups? Or the accreditation of existing low vision clinics? Maybe instead the focus should be on establishing graduate programs in low vision or systematic training of service providers nationwide in low vision? Should each of us choose the issue that excites his/her advocacy desires and join the group(s) presently planning action in that area? Or should those in this audience rally around the training issue, perhaps in a more concerted way than originally anticipated?

If, for example, systematic low vision training of service providers were identified as the issue to begin with, most of us gathered here could agree that it was a common concern. However, we may have to discuss more fully whether we see a need for "joint action" as versus "individual

action." Each of us could return to our home settings, conduct one training activity, report it to the sponsors of this workshop and thus fulfill our commitments. If on the other hand, this group recognized the advantages of organizing ourselves and using this opportunity to establish a nationwide training effort, what would such a structure look like, how would we launch it, and how would we maintain it to fulfill this identified common goal?

Structural Attributes:

Some possible structural attributes have been identified in COALITION BUILDING which could be adapted to our common interest area. These include a structure or organized approach which--

1. Promotes linkages between diverse groups
2. Respects the autonomous efforts of existing groups
3. Does not further fragment existing approaches
4. Is capable of attracting participation with minimal recruiting efforts
5. Can be established quickly⁴

In preliminary thinking about organized efforts on a given topic area(s) it is important to also consider what is involved in maintaining its existence from a management perspective. These include, but are not limited to,--

1. Continually reinforcing of the commonality of needs, interests, and aims which originally brought the group together.

2. Continually assuring members of their autonomy within the broad framework of the group.
3. Avoiding becoming a competitive force within the broad framework of the group.
4. Offering members opportunities to build patterns of cooperation through joint activities.
5. Helping members perceive the organized effort as successful.⁵

How might these guidelines be applied to this group gathered here? If this diverse group of service providers elected to pursue staff training collectively as a form of client advocacy, it could begin by grouping by RSA regions and encourage the sponsors of this workshop to serve as a national liaison. Regional groups could meet to discuss what each can contribute to the common goal, identify others in their regions who may want to be involved, select a means of maintaining contact (phone, quarterly regional meetings, correspondence with annual meetings, etc.), and clarify objectives and possible strategies. Some strategies that might be used in developing continuing education programs regionally have been identified in my earlier presentation to the continuing education specialists and administrators: "Developing Continuing Education Programs in Low Vision for Rehabilitation Professionals." Meanwhile, at the national level, our sponsors could keep regional groups informed of each other's progress, identify additional resources for regional use, and provide an annual opportunity for regional group representatives to meet to update each other and expand

strategies; or meet to assess the need for continuance and at what capacity.

In this way linkages between diverse groups could be encouraged both nationally and regionally. Other interested organizations and individuals could be invited to participate, especially on a regional basis. This structure can easily be put in place if it builds on existing resources such as with this workshop's sponsors, RSA Regional Continuing Education Programs, and the regional offices of the Rehabilitation Services Administration.

In cases of other low vision issues, collective efforts might focus on getting one existing low vision advocacy group to take the leadership, establish a coalition in a formalized mode among the existing organizations having low vision interests, or encourage your associations or advocacy groups to join in with the American Council of Citizens with Disabilities on common issues such as discrimination in the job market.

Which will it be for you? Will you be an advocate? If so, for what and under what auspices?

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FUNDING RESOURCES AND LEGISLATION

FOR LOW VISION SERVICES

OR: HOW TO PAY FOR IT ALL

by

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FUNDING RESOURCES AND LEGISLATION FOR LOW VISION SERVICES
OR: HOW TO PAY FOR IT ALL

I am frequently asked how I have managed to obtain funds to run our Center for the Partially Sighted, and my first answer is usually, "With great difficulty!" That answer, though admittedly rather facetious, is not very far from being quite accurate. I say this because preparing applications for federal grants in the research and service delivery areas (a) requires the efforts of many very bright, highly skilled, and energetic colleagues, (b) is very time consuming, and (c) is very costly. For example, recently my colleagues and I prepared and submitted a grant to a federal agency that involved the full- or part-time efforts of from 10 to 15 people for a period of about three to six weeks, and it resulted in two documents totaling 575 pages.

In addition to the time, effort, and cost of application preparation, applicants must be prepared to face the fact that they will very likely encounter bureaucratic indifference. They will find that federal agencies are populated with all too many people who could care less what you plan to do for handicapped persons or what you have done or are doing for them.

It often seems that fund raising for low vision services

and research is basically a Sisyphean enterprise. For example, there is currently no federal agency that I know of that will pay for all or part of the year-to-year delivery of comprehensive services to low vision persons such as low vision optometric/ophthalmological examinations; individual, family, or group psychological counseling; orientation and mobility training that incorporates the use of residual vision; and direction to educational, vocational, social, and recreational opportunities in the community. There is legislation on the books that makes it possible in theory to provide funds for such services. For example, Section 305 of Public Law 95-602 describes comprehensive rehabilitation centers for handicapped persons, and that section could easily be construed to include comprehensive centers for low vision persons. However, when you inquire about these centers, you find that the Congress in its infinite wisdom has provided only two million dollars to be spent throughout the length and breadth of this country in fiscal year 1980 on such centers. What is equally odious is the fact that the old Department of Health, Education, and Welfare, the new Department of Education, and the Rehabilitation Services Administration (RSA) have done little or nothing to try to alter the funding picture for comprehensive rehabilitation centers in future fiscal years. However, don't despair because we still have some genuine soft money

in the federal arena that you can vie for. These dollars are obtainable from the National Institute of Handicapped Research (NIHR) and from RSA. The NIHR dollars can be obtained for research-oriented projects. God forbid that you should be interested in providing services to handicapped persons with NIHR dollars in the course of your research. Practical assistance to handicapped persons is not considered within the realm of current NIHR management, and I am afraid as the years go by even applied research will be considered to be taboo. I fear that NIHR aspires to become another National Institute of Health, which I find depressing because of NIH's lack of support of many practical service programs.

As for RSA, it could be the spearhead of setting up and funding centers for low vision persons, but that would take courage and imagination, two qualities that are difficult to maintain when trying to survive in federal bureaucracy. Currently RSA does fund training grants, so if you can clothe your service delivery and research projects in training grant costumes, you might be able to obtain some RSA funding.

In addition to bureaucratic indifference, lack of imagination, and timidity, we find that nationally speaking the number of dollars the federal bureaucracy has available for supporting centers for low vision persons is tragically small. This, I believe, grows out of the fact that up until now the

federal bureaucracy and much of the Congress have not recognized the existence of low vision persons, let alone the fact that they make up the overwhelming majority of the visually impaired and the fact that they have special needs that can and should be satisfied. Relative to vision, the bureaucracy and much of the Congress act as though the nation's population is either blind or fully sighted, and by blind they mean totally blind, or at best having some eyesight that, for all intents and purposes, is useless. I am firmly convinced that until and unless the bureaucracy and the Congress are aware of low vision persons, are cognizant of how numerous they are, and are ready to treat them as a group distinct from the functionally blind and from the fully sighted, nothing significant will be done to fund programs designed to meet their special needs.

I do not claim to be an authority on the availability of state, county, or local government funds to support comprehensive centers for low vision persons. I can, however, tell you a bit about the situation in California. In a nutshell it is very discouraging. I say this because California has chosen to restrict dramatically the tax burden on the home owner and on other property owners, and has also chosen to put a heavy lid on spending by its state legislature. True, it did reject a recent attempt to halve the state in-

come tax, but that reversal in the tendency to restrict state expenditures should not be taken as a sign that Californians are ready to go on another spending spree. They are not prepared to do this, and I see no other sign at this time that would indicate that my conjecture might be incorrect.

I am also not an authority on the availability of funding from the private sector, but here I can at least share with you our experience in trying to obtain support from that portion of our economy.

First of all I want to point out that I am a great believer in help for handicapped persons being funded with non-governmental dollars. However, accomplishing this goal is not an easy task. Ideally one looks for very wealthy persons who have the resources to amply endow your center and hence make it completely or nearly completely financially independent. Finding such persons is a horrendous job. People don't come up to you and say, "Hey, I know of a multi-millionaire who is just dying to give away N million dollars to help handicapped persons." Further, even when you locate these wealthy people, it takes much care and patience to win their confidence, to tell them what you are doing and why it is so very important, and to make them aware of your center's financial needs. If you succeed in doing these things, you still have absolutely no guarantee that they will really

become interested in your program or that they will be willing to contribute even a nickel to its survival. It often happens that even if you do win their empathy, they turn out to be already financially "married" to one or more other worthy causes.

You can hold large fund raising dinners at which one or more celebrities are featured. If you know some red-hot celebrities and you can allocate staff time to work with professional dinner arrangers, this technique can gross as much as \$100,000 per dinner.

You can go the public relations route and get your organization's name and activities into local and national newspapers and magazines, and on local and national radio and/or TV programs. This will bring you lots of mail from people who are in great need of visual assistance but will bring you only limited contributions. We have found that this technique doesn't uncover the big, good, and empathetic multimillionaire who will shower you with mucho donation dollars.

You can give your patients the best possible services and, at the same time, make them aware of your institution's financial needs, and occasionally they will make small donations and even incorporate your center in their wills.

Finally, you can appeal to former patients for financial

assistance, and if you are like our center, you will be very pleased with the high percentage of response, but at the same time, you will be disappointed with how few dollars such an appeal actually brings in.

One more thing that you should be aware of -- it is much easier to raise private dollars for buildings and equipment than it is for paying salaries and purchasing supplies. I don't know why this is the case. Perhaps donors derive some feeling of immortality from paying for a building, a room, or a piece of equipment that they don't obtain from paying for operating expenses.

Before turning to the subject of legislation, I believe a few words should be said about fees. It is possible to compute one's total cost of operation for a given period of time (including salaries, fringe benefits, travel expenses, equipment, supplies, and overhead*) and to estimate the number of new patients one expects to see in that period of time. One can then divide the former by the latter to determine what it actually costs per expected patient to provide the service mix that one's center is able to deliver. However, it is quite another thing to try to collect that cost from

*Overhead includes, for example, rent, utilities, repairs, custodial services, office furniture, drapes, carpets, xeroxing, typewriters, and institutional administration.

one's patients. Most patients simply do not have the money to pay for the actual cost of services they receive. What is equally troublesome is the fact that for most patients there is no third-party payer available. If there is one, the kinds of services the third-party payer will cover are limited, and the amount the third-party payer will pay for those services is frequently considerably less than their actual cost. Therefore, it follows that some mechanism must be found for subsidizing services provided to patients who cannot afford to pay for all or part of them. Existing and hoped-for mechanisms for doing this have been the subject of the earlier portion of this talk, and to a large extent the following discussion of legislation is rooted in this basic problem of finding the dollars to pay for some or all of the services and visual aids that are so urgently needed by low vision persons and to fund programs specifically designed to meet their special needs.

Now what about legislation? Well, currently some of us are trying to help members of the Congress prepare legislation favorable to low vision persons. Among the things we are trying to accomplish are the following:

1. Make it mandatory that Medicare pay for low vision examinations, for visual aids prescribed as a result of those examinations, and for training in the use

of those aids;

2. Pinpoint a funding source or sources that would be obliged to pay for (a) low vision examinations for school-aged low vision children when these children enter school and at least every three years thereafter while they are in school, (b) the visual aids that are prescribed as a result of those examinations and that are to be used both in and away from school for school-related activities, and (c) training in the proper use of those aids;
3. Make it perfectly clear that Section 305 of Public Law 95-602 is to include specifically comprehensive rehabilitation centers for the partially sighted (i.e., for low vision persons); and
4. Appropriate funds to establish and operate at least 12 comprehensive rehabilitation centers for the partially sighted (i.e., for low vision persons) in or near large metropolitan areas for a specified number of years. Here it is assumed that those centers that prove to be successful will be funded year after year beyond the initial period.

Now, lest you have the idea that preparing this legislation is a simple straightforward matter, permit me to enlighten you. I shall do this by giving you a couple of

examples of important and sometimes unexpected complications that spring up to plague the uninitiated, and even the old pros.

1. When attempting to put together legislation regarding Medicare, we soon were faced with answering the following question: Which spectacle lenses, if any, should be paid for by Medicare for low vision persons? Optometrists and ophthalmologists are fully agreed that some spectacle lenses should be covered by Medicare. Those of us who were trying to take into account the interests of Medicare as well as those of low vision persons, recognized that the spectacle lenses to be covered should, if possible, take care of nearly all of the needs of low vision persons and, at the same time, eliminate from Medicare coverage at least 90 to 95 percent of all spectacle lenses prescribed in this country. Drs. Edwin Mehr and Allan Freid, two of the leading low vision specialists in the nation, provided me with a solution to this problem that I feel will prove satisfactory to nearly everyone. They suggested that spectacle lenses to be covered by Medicare for low vision persons should have more than four positive diopters of correction over and above the correction needed to bring an image

of a viewed object into focus on a patient's retina when the viewed object is located at optical infinity. Spectacles with lenses meeting this criterion I have chosen to call "unconventional spectacles".

2. Both ophthalmologists and optometrists agree that low vision examinations covered by Medicare should be performed by ophthalmologists and optometrists who are knowledgeable concerning and experienced in low vision practice. However, a leading national ophthalmological organization insists that all referrals for such examinations must come from ophthalmologists, and a leading optometric organization disagrees with this requirement. The optometric organization feels that anyone should be entitled to make a referral to either an ophthalmologist or optometrist who is qualified to give low vision examinations. I am certain that even Solomon could not solve this problem to everyone's satisfaction, and since I am also certain that I am not a reincarnation of Solomon, I shall not even try. However, I will do all I can to see to it that low vision persons are not made the victims of interprofessional bickering.

I recognize that I have not painted a bright and rosy picture concerning the funding of services needed by low

vision persons, but to have done so would have been dishonest and deceptive. Even so I sincerely believe that we are not so stiff-necked and narrow minded that we will always refuse (a) to accept low vision persons as a group distinctly different from both the functionally blind and the fully sighted, and (b) to recognize that the remaining or residual vision of low vision persons has value and can and should be used together with appropriate visual aids and other sensory capabilities to perform important tasks. When and if we rise above our constricted view of the visually impaired population, the future for these persons will grow brighter and brighter. Meanwhile Sisypheans like myself will continue to tug at the leg of an indifferent or oblivious giant in the hope that he or she someday will begin to see the light.

DEVELOPING CONTINUING EDUCATION PROGRAMS IN LOW VISION
FOR REHABILITATION PROFESSIONALS

by

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DEVELOPING CONTINUING EDUCATION PROGRAMS IN LOW VISION FOR
REHABILITATION PROFESSIONALS

It has been estimated that there are millions of underserved individuals with low vision. The reasons most often cited for this neglect is the inadequate knowledge and skills among rehabilitation professionals necessary for effectively assisting clients in using the vision they do have whether with, or without, appropriate optical aids (Beliveau & Smith, 1979). At present few low vision oriented educational opportunities exist at either the pre-employment or post-employment stages of education. Recognizing that the 1980 National Training Workshop in Low Vision could not begin to reach the numerous employees who need this form of learning experience, the workshop leaders requested that participants in the national training make a commitment to provide at least one continuing education low vision presentation, and hopefully more, in their respective localities. In addition, continuing education specialists are being encouraged to promote regionwide training activities in low vision for rehabilitation professionals, and administrators are being encouraged to assist with gaining the necessary resources and support for linking training with practice as well as for

making training possible. This paper is intended to guide each type of national workshop participant in developing continuing education programs in low vision in their respective Rehabilitation Services Administration region, state, agency, facility, and/or office setting.

Before specifying the who, what, how, where, and when of program development, it is important to recognize the limits of what a training program can do. For instance, it cannot make up for administrative problems such as insufficient resources, e.g., optical aids, inadequate reward systems, or failure to clarify job responsibilities in terms of serving the low vision client. What it can be expected to do with appropriate design and application is provide opportunities for increasing knowledge and understanding, increasing skill levels, and/or influence attitudes in selected areas of low vision.

Whether the goal is to train one or one hundred, the following six major steps, when followed carefully, can help assure a successful training event:

1. Identify the learner population(s)
2. Clarify the common needs among the learner population(s)
3. Design the training program for the intended population(s)

4. Set the stage for the training event(s)
5. Conduct the program
6. Follow-up

Each step is important and must not be bypassed if the training is to be applied on the job.

IDENTIFYING THE LEARNER POPULATION:

It is difficult for a training activity or even a series of training programs to be all things to all people; therefore, step one consists of defining the type of rehabilitation professional to receive training. Will it be all orientation and mobility specialists, rehabilitation teachers, or rehabilitation counselors? Or will it be a mixture among these? What about their supervisors or other levels of management? Then too, perhaps there are individuals of other disciplines working closely with the rehabilitation professional who should be included.

How can a choice be made among so many options? First, ask the question: What is not being done, or being done incorrectly, for low vision clients that is essential for their rehabilitation? Who is not doing it, or doing it incorrectly? For example, if low vision aids are available in a given agency but are not being used, or are being mis-

used by the rehabilitation teachers or the orientation and mobility specialist, then these may be the priority population for training. On the other hand, if the resources, such as optical aids, are not available because of administrative policy, and not financial limits, perhaps educational efforts may need to begin at a higher level. Or at still another level, if the supervisors are not encouraging the rehabilitation professionals to serve the low vision clients, perhaps the supervisors could benefit from the same or similar learning opportunity as their employees. In some instances it is useful to begin at the top with a brief overview of the low vision services concerns and training content. This could then be followed with a one day supervisory training session, and lastly, by the training program for the rehabilitation professional.

Not only does the trainee population need to be defined by types of employees, but also, by geographical areas. Will there be an attempt made to cover all rehabilitation professionals in the agency, the state, or the region? If so, will these participants come from the same localities or from several different geographical areas for each workshop offered?

Generally, unless the learning experience is predominantly

lecture-oriented, the ratio of instructor to participants should be limited to one to ten, especially for new instructors. Thus, the number of instructors or facilitators willing to assist with each training event may affect the numbers to be trained. Then too, the availability of finances for the workshop will restrict numbers for consideration, and perhaps types of employees covered.

In finalizing the trainee pool, it is wise to keep in mind the advantages of starting out small unless you are a skilled trainer with many resources at your disposal. Even then many trainers pilot test before covering large numbers of individuals over wide geographical areas.

The result of having followed step one should be an identification of the types of employees needing priority attention, the extent to which that population will be covered, and the manner in which that group will be covered, for example: "orientation and mobility specialists in the agencies for the visually handicapped in region 3 will be trained using a cross section from the region for each of 3 training events").

CLARIFYING THE NEEDS OF THE SELECTED LEARNER POPULATION(S):

Now that you have decided who to train, what will the

training focus on? Everything! Do you have months or years in which to do it? No? Then perhaps you will want to be selective. If so, the needs of the selected learner population should guide in choosing appropriate learning objectives and instructional strategies for meeting these. If the population represents a cross-section of disciplines or staff levels, the reasons for mixing these needs to be added to the assessment of specific needs.

How can needs be identified or clarified for the trainee population? Among the variety of individual and group techniques for estimating needs, sampling techniques are used most frequently. Instead of assessing each potential learner (the ideal), individuals representing that learner population provide information on problems they are experiencing or areas of need. Sometimes individuals representing the supervisory staff above the intended trainee population are also involved in needs assessments.

Samplings of the needs of the trainee population may be made using individually administered techniques such as surveys and interviews or group techniques such as the forced field analysis exercise or the nominal group technique (to name a few). Survey questionnaires and interviews may cover topics such as job responsibilities, previous experiences, competen-

cies needed, familiarization and skill in using or teaching the use of various optical aids under varying conditions, as well as concerns individuals have in working with the low vision clients. In addition, individuals may be asked to define terms related to physical or perceptual skills used to help an individual function efficiently such as visual motor coordination, accommodative ability, spatial perception, figure/ground, visual memory, etc.

Group sampling, using the forced field analysis format, invites the representatives of the learner population to identify the driving forces and restraining forces which keep the level of services to low vision clients where they presently are. This exercise allows the group to list each type of force, then to look at the restraining forces more closely to see which are administrative problems and which are training ones, and to prioritize among the training programs. By changing the restraining forces or by making them driving forces, ultimate change in the low vision services should result. A sample of the graphic representation of the force field is shown below:

DRIVING FORCES →	WHERE WE ARE NOW	← RESTRAINING FORCES
willingness of staff to serve clients with low vision		excessive caseloads
availability of optical aids		*lack skill in using aids
low vision evaluation clinics		*lack skill in using data from evaluations
etc.		etc.
		*training problems

The nominal group technique has been used successfully for obtaining the input of each representative in the group, promoting the benefit of group thinking without compromising the integrity of individual input, and producing a prioritized list of problems within a given time period. The procedure consists of four basic steps:

1. Silent generation of problem statements as perceived by each individual participant.
2. Round robin listing (for public display of problem statements).
3. Structured, time limited discussion (clarification and combination) of problem statements.
4. Prioritization (selection and ranking) of problem statements.

A sample prioritized listing which might result from rehabilitation professionals is shown below:

FIVE MOST IMPORTANT PROBLEM-STATEMENTS

<u>Weighted Score</u>	<u>Problem Statements</u>
80*	Lack ability to purchase optical aids for clients.
62	Lack hands on experience in use of aids
47	Inadequate use being made of low vision evaluation clinics
47	Low priority interest by administrators towards low vision
28	Lack of coordination between varied disciplines for lv client

*There were 10 people in the group, and if all had selected the same problem and ranked it 10, the weighted score would have been 100. Eighty is the highest weighted score for this group.

The end product of following through on step two is a prioritized set of needs from which training objectives and instructional strategies can build. (e.g. If ability to purchase aids is lacking, training in the use of third-party funding may be necessary along with the use of aids as illustrated above).

DESIGNING THE TRAINING PROGRAM:

The needs assessment is the foundation for successful training programs. It guides the selection of objectives, content, instructional methods, and application strategies--the major components of training events. Objectives can be

written in a variety of ways: general or specific, learner-oriented or instructor-oriented, minimum or maximum, interim or terminal, major or sub, or cognitive, affective, and behavioral. However, the objectives which are most useful to both the instructor and the participants are those stated in terms of what participants can expect to get from the program, i.e., how the content will apply to the identified needs of the trainee population. To clarify, let us say that the problem or need has been identified as "rehabilitation professionals lack skill in using optical aids." One of several objectives based on this need may be written in general terms as "Participants will be able to demonstrate the use of appropriate aids" or made specific by adding "for locating moving and stationary objects as far as twenty feet away."

A series of objectives, such as these outcome-related ones, permit more accurate selection of specific content to cover and of appropriate instructional strategies. Continuing with our example, the content, therefore, might be to teach the power and field of each aid, how to hold the aids, how to focus it, how to align one's self in order to effectively view and identify objects, signs, etc. The logical instructional strategies would include lecture and demon-

stration by the instructor, practice with viewing through each aid, and practice with solving typical problems that are likely to occur with low vision clients seeking to use such aids.

Note: Sample training designs for teaching low vision and lists of strategies to choose from in designing training programs will be made available at the national workshop.

A number of methods have been used to encourage application of workshop content once the participants return to their respective jobs. Learning contracts, letters to supervisors of the participants, practicums, and other forms of action plans have been prepared before or during the workshop to promote application on the job. This national workshop is an excellent example of an application strategy. Eligibility for participation was contingent upon willingness to make a low vision presentation upon returning to the respective job. If the individual develops their own action plan, it is important that the plan be stated in specific, job-related, realistic, and measureable terms.

As a part of the application strategy, the trainer or workshop facilitator will need to think of ways to reinforce this, i.e. follow-up. Some training programs have designed a follow-up of 60 days, others of 6 months. Some have required the action plan or action memo to the supervisor be

in three copies so that one copy can be used by the trainer several weeks later to return to the participant along with an evaluation form. This serves as a reminder of the commitment and of the training event.

In addition, some trainers have opted to follow-up with monthly or even weekly one page tips that support the workshop content. Again this serves as a reminder of the workshop experience and a reinforcer of what was learned.

SETTING THE STAGE FOR THE TRAINING EVENT(S):

Beyond carefully designed training programs, the success of the training event depends upon the backing for it, the pre-workshop interaction with the participants, the selection of a meeting facility (if not already available), and the special arrangements (e.g. equipment, supplies, media aids, hotel or travel reservations, lobby signs, handouts, etc.). Since the aim of all training activities is to influence behavior change and/or attitude change on the job, it is invaluable to have the administrative and supervisory support of the training. Such support, assured before the training event, can reinforce the learning and help remove obstacles to application. To gain this support, information must be provided to these staff levels on the objectives of the train-

ing along with the criteria for participant selection. If specific ways the supervisors can be supportive after the workshop can be identified, that is even better. Otherwise encourage supervisors in person if possible, or at least in writing, to meet with the potential trainee both before and after the event to discuss ways to use the learning experience on the job.

If the representatives in attendance at the national workshop choose to take an integrated regional approach to presenting low vision workshops, there are distinct advantages to working closely with, and through, the RSA regional office and the RSA regional continuing education program. Oftentimes they can identify the financial and administrative sources for assuring sufficient regionwide backing for launching a series of low vision workshops, beginning most frequently with a pilot program to assure quality training and to test the acceptance level among rehabilitation staff in that region.

Pre-workshop correspondence or activities with the potential trainees should be prepared and designed to (1) set the tone for the program, hopefully a positive, creative, enthusiastic one, (2) stimulate thinking along the lines of the program content, and (3) reinforce the importance of

applying what is learned to the job. (Note: sample letters and preworkshop profiles will be available at the Chicago workshop).

In addition, pre-workshop information to participants should include details about the objectives, training facility, times, and tentative agenda, as well as costs to the participant for lodging, meals, travel, etc.

The training facility should be selected according to its location, costs, meal availability, and ability to accomodate the group size, equipment, seating arrangements as well as a willingness to help. The objectives of the workshop need to be considered here also. For instance, if the objective is to teach the use of optical aids in the urban traffic conditions or environment, a facility in the mountains will not be suitable. Or if the objective is to promote better communications between employees at the same office setting on behalf of low vision services, a training facility across the state is not necessary. Meeting room facilities may range anywhere from no cost to \$200 a day, depending on its size and the demand for it. Your budget will be the deciding factor. Some facilities will provide equipment and essential supplies such as 16 mm projector, screen, blackboard and/or flipcharts. The sales office of

the hotel will be happy to describe what can be provided and at what costs. Often they can also handle catering arrangements (coffee, danish, group luncheons, etc.).

A checklist for workshop preparations will be made available at the Chicago workshop which outlines the preliminary planning, selection of meeting facilities, equipment, visual aids, speaker considerations, and other considerations, as well as what to do immediately prior to the start of the meeting.

These collective actions will help set the stage for a smoothly running workshop. And now to the event itself.

CONDUCTING THE WORKSHOP:

Everything is set now and you are ready to begin, right? Wrong! Every workshop has a beginning, a middle, and an end. What is done at the beginning effects the middle and the end (in some instances the beginning and the end can become one). To be more specific, participants have left their active work environments in which they have been in control of their activities to come to an environment filled often with strangers, who like themselves, must take a passive observer role. They are concerned about the work they are neglecting in order to attend a training event which may or may not be directly or immediately applicable to them. It takes time

to bring together the "outside" thoughts and attitudes and relate them to the training as well as to build trust in the leaders and fellow group members. It takes time to prepare for change.

Climate setting includes the physical setting, the security concerns, the social concerns, the ego concerns, and the self-actualizing concerns. The physical setting includes room size, chair arrangement, comfort, temperature, etc. Security concerns encompass knowing the rules and expectations, what is to happen, and how to be free of psychological threats. Social concerns cover the clarity of the group norms, group cohesiveness, and identification of the issues for consideration as a group member. Turning next to the ego level, those of you who are familiar with Maslow's needs levels, may begin to recognize the similarities which have been developed by Forrest Belcher and Fred Margolis (1980). In climate setting the ego concerns mean the participant begins to be satisfied with their own participation and receive positive reinforcement from the trainer and/or participants. Finally, the last stage is when the participant begins to feel the training is useful and is satisfying learning needs.

Typical climate setting activities include meeting

and greeting participants, arranging the physical environment for optimum comfort, outlining the plans/rules/arrangements, getting acquainted as a group letting participants state their expectations and understand those of the leader, and encouraging all participants to participate mentally, vocally, and physically throughout the program.

Attention to climate setting at the beginning increases the degree of involvement in the middle when your various instructional strategies are being used to achieve the identified objectives. During the middle, participants are evidencing a sense of confidence and belonging which enhances learning. During this period it is important to remember that this training is of adults, and not children. Adults have a great deal of experience to draw from and much to contribute through idea exchange. Respect for their maturity, sense of responsibility, and evaluation abilities as material is presented or ideas are given will strengthen their commitment to the concepts being taught. Thinking of one's self as the "facilitator" as vs. the "trainer" sometimes helps. In the latter position, it is all too easy to convey the idea of having all the answers whereas in the "facilitator" role the goal is to draw as much as possible on the wisdom and experience of the group members.

About the end, what can be said. Much. Just as it was difficult to come to unfamiliar surroundings; it is just as difficult to leave a group that has become cohesive and supportive. Verbal recognition of this as well as allowing time at the end of the program for action planning can assist with bridging the training environment with the work environment.

FOLLOW-UP:

Well, the training program was a success. How do you know? No one walked out? A few said so? The pretest scores were a lot lower than the post test scores? There weren't any questions the leaders couldn't handle? The participants were able to come up with action plans? The reaction sheets turned in by each participant reflected the content, instruction, facility, audiovisual aids, and their own level of participation were very good in terms of the stated objectives?

Each of the above ways to determine success is useful. However, the bottom line of any training activity is how it affects the behavior back on the job. To determine this, you can do several things: (1) ask the participant several weeks later what changed because of the training, (2) prepare a preworkshop profile on each participant and send a postwork-

shop profile six weeks to six months later and compare, or (3) ask the supervisor to identify change needed in that participant and then to assess whether that has occurred after a given period of time after the program ends.

The feedback from intensive follow-up assists in assessing the value of that training program, though it is recognized there is no way to isolate the affects of that training event from the host of individual and environmental changes which could also affect certain behavioral changes. Feedback from several workshops over a period of time which show consistency can be grounds for "success".

SUMMARY

The ideas presented here for developing continuing education programs in low vision for rehabilitation professionals are a beginning. Add to these the results of your own experiences with client training and other workshops and then use your own individual style. It will work well!

REFERENCES

1. Beliveau, Monica and Smith, Audrey. Improving Skills of Rehabilitation Personnel in the Delivery of Independent Living Service Programs for Low Vision Individuals. Project application for RSA Short-term Training Grant, Division of Manpower Development, 1979.
2. Belcher, Forrest R. Preparing for Learning: Climate Setting Ideas. Paper presented at the National American Society for Training and Development Conference, Anaheim, California, May 1980.

NATIONAL TRAINING WORKSHOP IN LOW VISION

Bismarck Hotel, Chicago: August 25-27, 1980

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AFB NATIONAL TRAINING WORKSHOP IN LOW VISION

Bismarck Hotel, Chicago: August 25 - 27, 1980

Monday, August 25th

8:00 - 8:30 Coffee, Tea and Breakfast Rolls

8:30 - 9:10 AFB Welcome: J. Albert Asenjo, Project Administrator

Introduction to Workshop - Goals, Objectives, Mechanics:
Monica Beliveau, Project Director
Audrey Smith, Workshop Coordinator

9:10 - 9:40 Skills Inventory

9:45 - 10:30 Keynote Speech - "The Low Vision Population - Rehabilitation Challenge for the Future"

Speaker - Sam Genensky10:30 - 10:40 BREAK

10:40 - 12:30 "Ocular Anatomy and Common Diseases of the Eye"

Speaker - Dr. Randy Jose12:30 - 1:30 LUNCH

1:30 - 2:45 "Functional Implications of Common Diseases of the Eye"

Speaker - Duane Geruschat

2:50 - 4:05 "The Comprehensive Clinical Low Vision Examination"

Speaker - Dr. Randy Jose4:05 - 4:15 BREAK4:15 - 5:00 Case Studies and Wrap-up with Faculty Staff
(Participants will engage in group discussion and problem solving)5:00 - 6:00 SOCIAL HOUR - Bismarck Suite6:00 - 7:00 DINNER

Monday, Aug. 25th - continued

7:00 - 8:30 Evening Sessions

1. Administrators and Continuing Education Specialists

Topic - "Developing Continuing Education Programs in
Low Vision for Rehabilitation Specialists"
Facilitators - Laura Edwards and Jules Cote

2. Rehabilitation Counselors

Topic - "Defining the Role of the Rehabilitation
Counselor in Services to the Low Vision Client"
Facilitators - Jo Blaine and Sam Genensky

3. Rehabilitation Teachers

Topic - "Functional Low Vision Evaluations for
Rehabilitation Teachers"
Facilitators - Bill Bitner and Gale Watson

4. Orientation and Mobility Specialists

Topic - "Functional Low Vision Mobility Evaluations"
Facilitators - Duane Geruschat and Vicky Berg

Tuesday, August 26th

- 8:00 - 8:30 Coffee, Tea and Breakfast Rolls
- 8:30 - 9:45 "Low Vision Referrals - An Interdisciplinary Dialogue"
(Group A)
- 9:50 - 11:05 Panel: Randy Jose - Moderator
(Group B) Vicky Berg
Bill Bitner
Jo Blaine
Jules Cote
- 8:30 - 9:45 "Training for Visual Efficiency Without Optical Aids"
(Group B)
- 9:50 - 11:05 Speakers - Audrey Smith, Monica Beliveau
(Group A)
- 11:05 - 11:15 BREAK
- 11:15 - 12:30 "Optical Aids - Basic Optics; Advantages and Disadvantages"
Speaker - Vicky Berg
- 12:30 - 1:30 LUNCH
(Participants will eat lunch while wearing visual distortion systems)
- 1:30 - 2:45 Optical Aids Learning Centers - Participants will rotate to various centers of near and distance optical aids and non-optical aids for hands-on demonstrations and learning activities
- 2:50 - 4:05 "Training Techniques for Near and Intermediate Optical Aids and Non-optical Aids"
(Group A)
Speaker - Gale Watson
- 2:50 - 4:05 "Training Techniques for Distance Optical Aids and Visual Field Enhancement Systems"
(Group B)
Speaker - Duane Geruschat
- 4:05 - 4:15 BREAK
- 4:15 - 5:00 Case Studies and Wrap-up with Faculty Staff
(Participants will engage in group discussion and problem solving)

Tuesday, Aug. 26th - continued

5:00 - 6:00 SOCIAL HOUR - Bismarck Suite

6:00 - 7:00 DINNER

7:00 - 8:30 Evening Sessions

1. Administrators and Continuing Education Specialists

Topic - "Improving Community and Professional Relationships in Low Vision Services"

Facilitators - Jules Cote, Mimi Winer and Laura Edwards

2. Rehabilitation Counselors

Topic - "Strategies for Implementing Interdisciplinary Follow-Through and Follow-Up Services"

Facilitators - Jo Blaine, Jack Morse and Sam Genensky

3. Rehabilitation Teachers and Orientation and Mobility Specialists

Topic - "Low Vision Needs and Training for the Elderly and Multi-handicapped"

Facilitators - Bill Bitner, Gale Watson, Duane Gerusch and Vicky Berg

Wednesday, August 27th

8:00 - 8:30 Coffee, Tea and Breakfast Rolls

8:30 - 9:45 "Training Techniques for Near and Intermediate Optical
(Group B) Aids and Non-Optical Aids"

Speaker - Gale Watson

8:30 - 9:45 "Training Techniques for Distance Optical Aids and
(Group A) Visual Field Enhancement Systems"

Speaker - Duane Geruschat

9:50 - 11:05
(Group A) "Psycho-Social Implications of Low Vision"

11:15 - 12:30
(Group B) Speaker - Jack Morse

11:05 - 11:15 BREAK

9:50 - 11:05
(Group B) "Consumer Advocacy, Resources and Self-Help Groups"

11:15 - 12:30
(Group A) Panel - Laura Edwards - Moderator
Mimi Winer
Jules Cote

12:30 - 1:30 LUNCH

1:30 - 2:45 "Funding Resources and Legislation for Low Vision
Services ... or How to Pay for it All"

Speaker - Sam Genensky

2:50 - 3:20 Skills Inventory

3:20 - 3:30 BREAK

3:30 - 4:30 Wrap-up: Future Planning/Participant Commitment
Workshop Evaluation
Trainee Expenses Reimbursement

Facilitators: Laura Edwards
Monica Beliveau
Audrey Smith

3/4/2011

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HF GROUP - IN

